ST NEWS
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Page 51

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APRIL 1987 VOLUME 5, NUMBER 12

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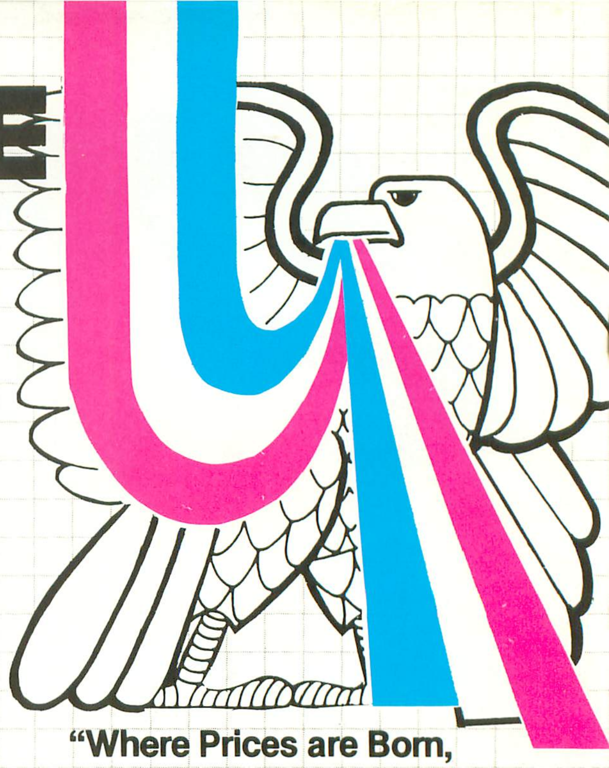
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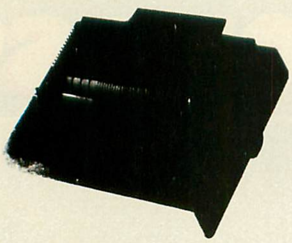
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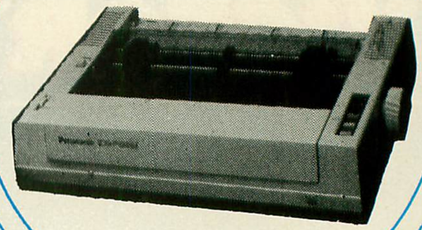
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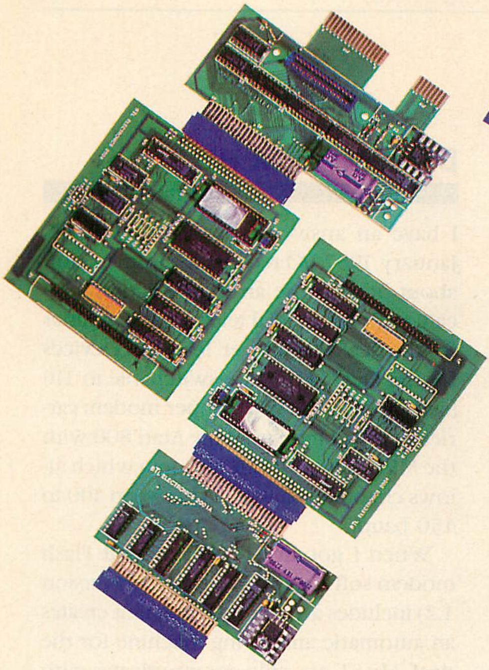
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Page 29

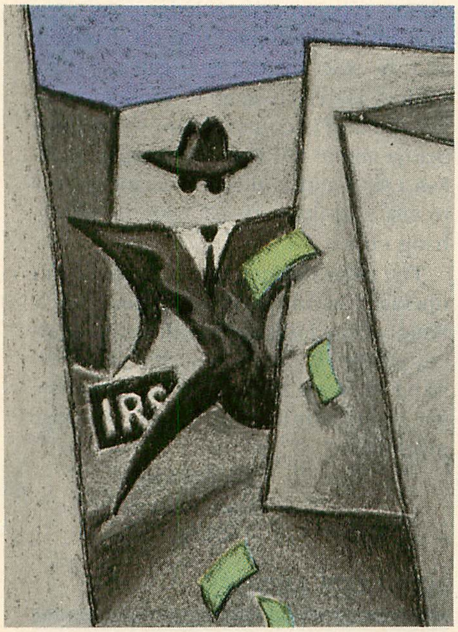
Antic

The ATARI® Resource

APRIL 1987, VOLUME 5, NUMBER 12



ICD Boosts 8-Bit Atari Power 29



Game of the Month 35



ST Resource 51

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Editorial submissions should include text and program listings on disk and paper. Submissions will be returned if stamped, self-addressed mailer is supplied. **Antic** assumes no responsibility for unsolicited editorial material.

I/O Board

INFOFIX?

Andy Barton's *Son of Infobits* (**Antic**, May 1985) is a terrific little database with a wide range of practical applications. However, I have a problem. The program lets you store and search several hundred logical lines of data, but any attempt to edit or delete an item causes all but the first 10 logical lines to be lost. Is there a fix for this?

R.C. Beckett
Hamilton, OH

In the 18 months since we published this program, no one else has brought this problem to our attention. In fact, we literally spent hours trying unsuccessfully *to duplicate the problem. Did you check the program with TYPO II (also by Andy Barton)? If not, you should have. Did you use DOS 3.0? If so, shame on you—switch to DOS 2 or 2.5 (available on Antic Monthly Disk or from users groups).—* ANTIC ED

NX-10 HELP

Regarding Josh Stark's I/O letter (January 1987), the Star NX-10 will take downloaded fonts in both draft and NLQ modes. My program *Font Maker* (**Antic**, March 1985) should be used in the Epson FX-80 version, since the NX-10 is Epson-compatible. I've also created programs to make and download NLQ character sets for the NX-10 which run on the 8-bit Ataris, as well as a GEM-based NLQ font maker program for the NX-10 and the ST.

Dr. James Duffin
274 Glen Manor Drive
Toronto, Ontario
Canada, M4E 2Y2

BUMBLE HIGH SCORES

Eddie Carsten's *Bumblbee* (**Antic**, August 1986) stores the high score in Page Six so it's "remembered" between games. Unfortunately, if the previously executed program also used Page Six, Bumblbee might report ridiculously high scores. To clear this up, halt the game and type POKE 1536,0:POKE 1537,0 in the immediate mode. The high score should then be zero.

James Hague
Richardson, TX

DEAF MODEM HELP

I have an answer to Lowell Goldberg's January 1987 I/O request for information about how to use an Atari to communicate with the special telephone machines for the deaf. The newer Terminal Devices for the Deaf (TDD) are switchable to 110 baud ASCII code with proper modem carrier signals. I have used my Atari 800 with the MPP (Supra) 1000C modem which allows changing baud rates between 100 to 450 baud.

When I got an ST, I found that Flash modem software (beginning with version 1.2) includes a 110 baud patch that creates an automatic answering machine for the deaf. My ST not only communicates with TDDs in real time, it can answer the phone, type an acknowledgement, capture any message sent, sign off, hang up and the reset for the next call.

Most Hayes-compatible modems will not respond to commands or send codes below about 150 baud. You must establish a 300 baud connection, change to 110 to talk and then change back to 300 to hang up.

The older deaf teletype stations (TTY) operate at about 40-50 baud speed, use a Baudot code instead of ASCII and have incompatible carrier tones. Still, I understand there are IBM and Apple programs for communicating with Baudot machines.

Ed Waldorph
CompuServe I.D.
73637,42

ATTRACT MODES

On my Atari 800, if there isn't any input on the keyboard for a couple of minutes, the screen starts changing colors. I have a display program that gets messed up by the screen's color-changing. Is there any way to prevent this?

Todd Donovan
Chagrin Falls, OH

Oh no...your Atari is suffering from the rare Chameleon Syndrome, a dreaded computer disease requiring major electro-surgery!

Okay...sorry about that bit of April Fool silliness. To stabilize the colors in your program, POKE 77,0. When using commercial software, stop the colors by

pressing a key that won't change the work you've done.

The automatic color-changing is known as "attract mode"—because (some say) it's similar to the flashing lights with which Atari arcade machines attract players. On your computer, attract mode prevents overheating the video phosphors so an image won't be "burned" into your screen. This problem occurs only in color sets used for many hours on end, such as in store displays. Home users essentially don't need to worry about burning out their picture tubes.—ANTIC ED

DIRECTORY ASSISTANCE

Is there some sort of directory "reorganizer" on the market that will let me alphabetize my disk directories?

Stephen Waldorf
Hamilton, GA

*DISKIO (**Antic**, January 1985) and* DISKIO Plus *(December 1985) will alphabetize your disk directories.*—ANTIC ED

HARD DISK HELP

In the January, 1987 I/O Board, Del Jenson wrote that he uses business software and is looking for a database that can run on his 10Mb SupraDrive hard disk. Our Micromod program is a legitimate business database that fully utilizes the SupraDrive. It stores the bulk of files on drive 3 and runs under MYDOS 4.2 and SpartaDOS 2.3 or 3.2.

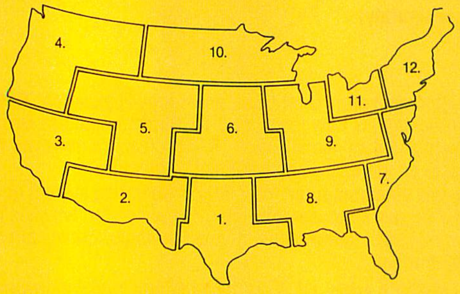
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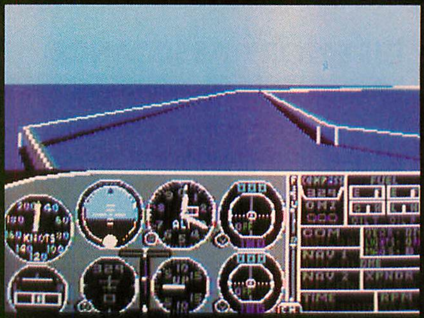
***Antic** welcomes your feedback, but we regret that the large volume of mail makes it impossible for the Editors to reply to everyone. Although we do respond to as much reader correspondence as time permits, our highest priority must be to publish I/O answers to questions that are meaningful to a substantial number of readers.*

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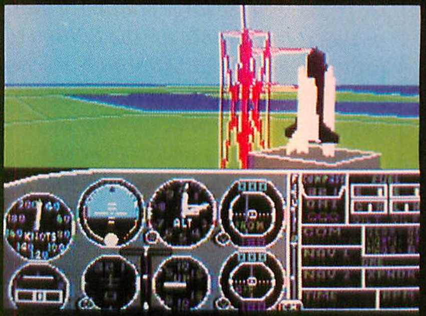




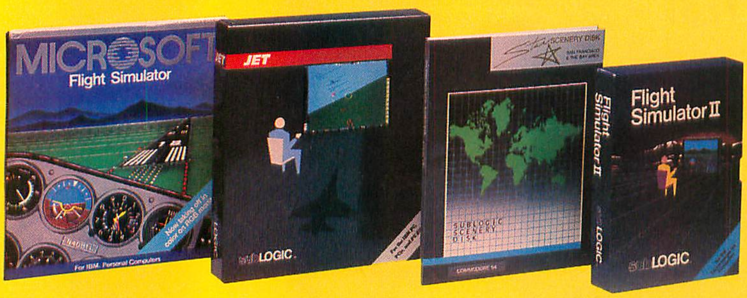
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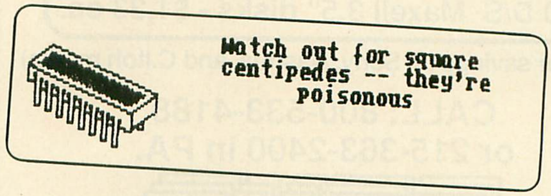


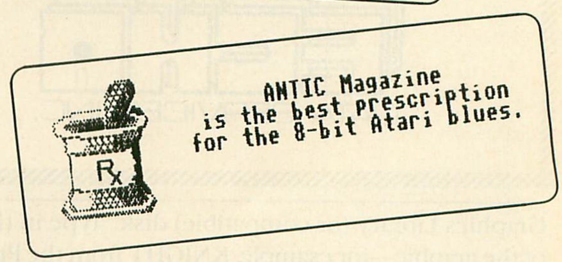
BY JAMES PIERSON-PERRY

Designer Labels

Print Shop Graphics get a new use

Transfer nearly any Print Shop image to stick-on labels along with your own text. To use this BASIC program, you need an 8-bit Atari with minimum 48K memory, disk drive, printer that's compatible with Epson, Star or Prowriter and some Print Shop files. You can use any Print Shop image except those on your original Print Shop disk. (These won't work because they use a different data format.)





My five-year-old daughter bet me I couldn't make my Atari 800 produce fancy name stickers for her and her sisters. "They must have pictures," she said. I'm no artist, so spending several evenings designing bit-mapped graphics was not my idea of fun.

But why not use Broderbund's Print Shop graphics? With a virtually unlimited selection of images, at least one of them had to be acceptable to my juvenile taskmaster.

The resulting program is Designer Labels, which lets you create and print your own customized Print Shop labels or stickers—each one with a graphic image and as many as seven lines of text in a standard or redefined font.

Designer Labels will work with any image from the Print Shop Graphics Library disks. You may also use pictures created with KoalaPad or Micro-Painter and converted into Print Shop format with Graphic Shop (The Catalog).

Uses for Designer Labels include return address labels for local businesses, bookplates, canning labels, emergency telephone number stickers, and, of course, hundreds of children's name stickers—all brightly colored and stuck on most walls in my house.

MAKING LABELS

Type in Listing 1, PSLABELS.BAS, check it with TYPO II and SAVE it to disk before you RUN it. Designer labels will not work when used with "Mini-DOS" utilities, such as *DISKIO* (**Antic**, January 1985) and *DISKIO* Plus (**Antic**, December 1985).

When you RUN Designer Labels, the title screen is displayed for about 40 seconds while the machine language routines are installed and the buffer strings are initialized. You are then prompted to select a printer type. (Star SG-10 owners should choose "Gemini.")

Let's create a test label to see how the program works. You begin with a blank label image shown at the top of the screen. The edit menu has five choices:

1. Get a NEW GRAPHIC image
2. ENTER TEXT for the label
3. CHANGE TEXT font
4. PRINT LABELS
5. EXIT from program

Press [OPTION] to highlight NEW GRAPHIC, then press [START]. At the prompt, insert into drive 1 a Print Shop

continued on next page

Graphics Library (or compatible) disk. Type in the name of the graphic—for example, KNIGHT from the Print Shop Graphics Library I. Press [START] again and the icon is displayed in the label image area. If the icon is not on the disk, a "Not Found" message is printed and you can try again.

To add text, select ENTER TEXT from the edit menu and type the text as you want it to appear on the label. This is a "what you see is what you get" operation. Upper and lower case letters, numbers, punctuation signs and graphic symbols are all valid text characters. Hold down [CONTROL] and use the arrow keys to move the cursor within the text input box.

Press [TAB] to center the current text line in the box. [CLEAR] will blank the current text line. [DELETE] gets rid of the last text character entered. When you're satisfied with the text layout, press [ESC]. This starts a machine language routine that translates the characters into the appropriate bit maps and displays them in the Graphics 8 label image.

DEFINE YOUR OWN

The label is almost done, but we can add another touch. If you have a disk with redefined character fonts such as Envision (The Catalog), you can use it with Designer Labels. The font files must have .FNT as the filename extension. Select the NEW FONT option, insert the disk containing the fonts and type the file name (only the first eight characters—the .FNT will be appended automatically). If you don't want a new font, the default is the internal ROM character set. This set can also be accessed by entering INTERNAL as the new font file name.

The last step is to print your creation. Select PRINT LABELS, make sure your printer is on, and insert the label forms into the printer. The program spacing is set for a standard 1×3-1/2 inch label size (about $7 for a box of 1,000). Enter the number of labels to print (maximum of 99) and press [START] to begin.

Put colorful Print Shop, KoalaPad and Micro-Illustrator graphics onto standard 1×3-1/2 inch labels—and spice them up with any character font you like

You'll probably need to play with the print head positioning so that the labels have proper spacing. If you print a series of different labels, make sure to readjust the printhead for each set or the spacing may be incorrect. My Prowriter requires about 14 minutes to print 99 labels.

All done? Now you can EXIT PROGRAM from the edit menu to return to BASIC, or go on to create some more new custom labels.

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*The two previous **Antic** articles by DuPont research chemist James Pierson-Perry of Elkton, Maryland have been a lot more science-oriented than this one. We published his* Molecular Weight Calculator *in May 1986 and* Response Surface Mapping *in December 1986.*

IF YOU'D ENJOY SEEING MORE ARTICLES LIKE THIS ONE, CIRCLE **154** ON THE READER SERVICE CARD.

Listing on page 83

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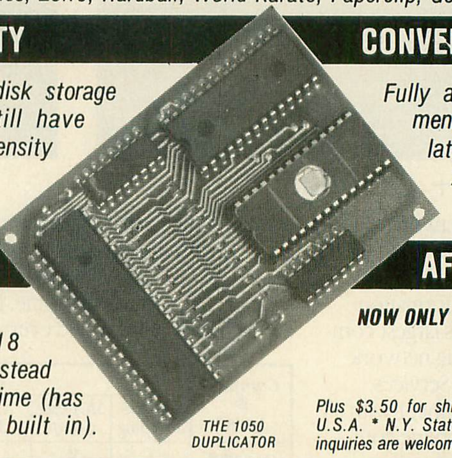
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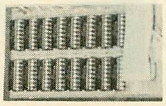
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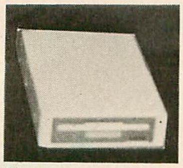
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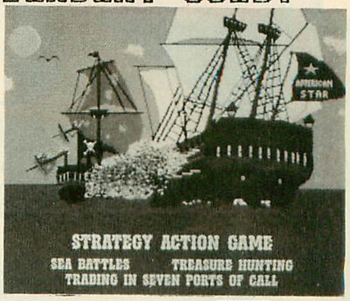
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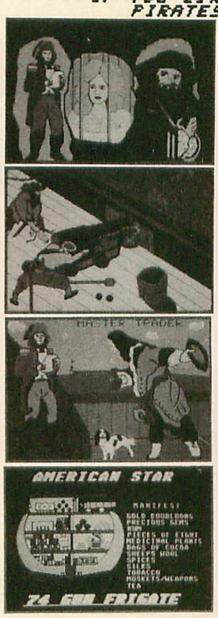
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PROGRAM PARAMETERS

LANGUAGE	MACHINE
NUMBER OF PLAYERS	1
AVERAGE COMPLETION	90 MIN
AGE GROUP	10 TO ADULT
CLASS	STRATEGY ACTION
SOUND	YES
ANIMATED GRAPHICS	YES
EQUIPMENT	MOUSE/JOYSTICK

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Page 6 Grab-Bag: Part 2

Easy soundtrack for your programs

BY MATT LOVELESS AND MIKE EGGERS

Here are two more short, useful programming routines from the Page 6 Grab-Bag (***Antic****, March 1987). SlowList gives you one-key pause or slowdown of scrolling program listing displays. Musician makes it easy to insert short sound cues into your own programs. These BASIC programs work on all 8-bit Atari computers of any memory size, with disk or cassette.*

"Protected" inside your 8-bit Atari is Page 6, 256 bytes of memory from location 1536 to 1791 ($0600 to $06FF in hexadecimal). Untouched by the operating system or BASIC, Page 6 helps bridge the transition between BASIC and assembly language by providing a safe home for many fast, powerful USR (USeR) functions—machine language routines that can be called from your BASIC program.

Last month, **Antic** published two of the compact, handy Page 6 routines which were originally released on disk by Synapse Software in 1982. Now here are two more from the Page 6 Grab-Bag. You do *not* need to know assembly language to use the routines in this article.

SLOWLIST

SlowList lets you pause or slow a program listing by pressing just one key. Normally you'd stop a listing display by pressing [CONTROL] [1], which can be cumbersome, especially if the listing is complex. With SlowList you can either halt the listing or just slow it down a bit for easier reading. Holding down [SELECT] slows the listing and you can adjust the scrolling speed by changing a few characters in the program. Holding down [START] halts the listing.

Type in Listing 1, SLOWLIST.BAS, check it with TYPO II and SAVE a copy before you RUN it. Place a disk containing DOS 2 or 2.5 in drive 1. When RUN, slowlist creates a file called SLOWLIST.EXE. Copy it to another disk, rename it AUTORUN.SYS and reboot. Antic disk subscribers will find SLOWLIST.EXE on the monthly disk. Listing 2, SLOWLIST.M65, is the assembly language source code. You do *not* need to type this in. It is presented to show how the program works.

SlowList works by checking the console buttons during the vertical blank interrupt. If the computer detects a keypress, it sets the flag SSFLAG ($2FF). Changing the contents of location 1619 ($653) changes the listing speed. To turn off the routine, hold down [OPTION] and press [RESET]. To reinstall the utility, just press [RESET].

MUSICIAN

Musician lets you add short tunes to your programs with very little programming effort. This utility demonstrates how to use BASIC strings for holding machine language subroutines. Since the BASIC ADR function returns the address of a string variable, we can easily use it with the USR function to locate and run the subroutine.

The first step is to create a completely relocatable routine—this means it must not make any references to specific memory locations (such as Page 6) or use any JMP (JuMP) instructions. Make sure your routine ends with an RTS (ReTurn from Subroutine) instruction too, or else it will never find its way back to your BASIC program.

Listing 3, MUSICIAN.BAS, is a short demonstration program. The utility itself occupies lines 10 through 16—these are the lines you would need in another program. To use MUSICIAN, type in Listing 3, checking with TYPO II and SAVE a copy before you RUN it. The characters in the strings are the ATASCII equivalents of the machine language values of the routines. For example, a value of 65 would appear as an "A" in a string.

If you have trouble typing the spe-

cial characters in lines 10–16, don't type them in. Listing 4 will create them for you. Type Listing 4, checking it with TYPO II, and SAVE a copy to disk. When RUN, Listing 4 creates these hard-to-type lines, and stores them in a disk file called D:LINES.LST.

To merge the two programs, LOAD "D:MUSICIAN.BAS" then ENTER "D:LINES.LST".

Finally, remember to SAVE the completed program before you RUN it.

Listing 5, MUSICIAN.M65 is the assembly language source code to show you how the program works. You do *not* need to type it in.

GAME SOUNDS

Musician was designed for BASIC game programmers. It's nice to have a musical jingle at some point in your game, and this is where Musician comes in. All you do is give Musician a string containing the notes to be played.

For example, to play the notes C, D, E, F, G, A, B—in that order—you would pass Musician the string "CDEFGAB" in the variable STRING$. Musician does the rest.

The format for the USR statement is as follows:

X=USR(ADR(MUSIC$),ADR(STRING$),ADR(NT$),ADR(TIME$),VOLUME)

MUSIC$ holds the Musician routine and is 159 bytes long. NT$ contains the decimal values for all the notes, and TIME$ holds the different note durations. (MUSIC$, NT$ and TIME$ are supplied with the routine, so you need not worry about them.)

VOLUME is the same as the fourth number of a SOUND statement and must be between 0 and 15.

STRING$ contains the actual notes to be played, and may contain optional octave, tempo, and duration information. Here are the legal characters:

Notes A through G perform exactly as they do on a standard musical scale. Sharps are represented by a #, as in A#. Flats are denoted by a –, such as A–.

O*n* determines which octave will be used. O is the capital letter "O," not zero, and *n* is a number between 3 and 6. The middle octave would be O3.

T*n* determines the tempo, *n* being between 1 and 3. It is not the actual tempo, but a number which corresponds to another number found in a table of prestored tempo values. (See table below.)

L*n* determines how long the notes will last, with *n* being between 1 and 4. L1 represents an eighth note, L2 a quarter, L3 a half, and L4 a whole note.

The following table shows the actual durations of the notes in jiffies (60ths of a second) based on both L*n* and T*n*:

	L1	L2	L3	L4
T1	2	4	8	16
T2	5	10	20	40
T3	15	30	60	120

A comma [,] puts a rest or pause in your music, causing Musician to wait for the shortest time allowable in this tempo—two jiffies in T1, five in T2 and 15 in T3.

The semicolon [;] puts a one-twelfth-second delay between notes—just long enough to separate the notes, similar to releasing a key on a piano.

The period [.] ends Musician and returns control back to your BASIC program.

Musician ignores any characters that are not listed above. But it assumes that whatever values you give it are within bounds. If you make a mistake, you may hear some sour notes.

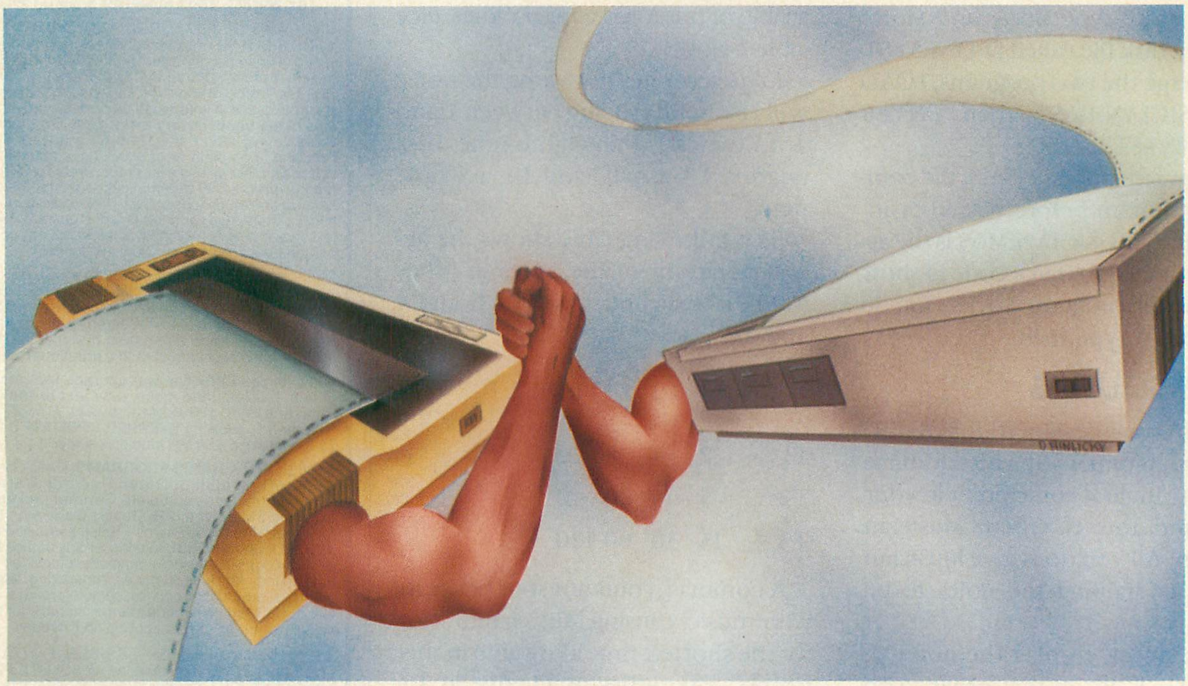
For learning more about assembly language and USR calls, helpful books are *Atari Roots* by Mark Andrews, published by Datamost, Inc., and *De Re Atari*, published by Atari. Although neither of these references is currently in print, they are available by mail from various sources. Check the ads in **Antic**.

Cousins Matt Loveless and Mike Eggers were both in their mid-teens when Page 6 was originally released on disk by Synapse Software in 1982.

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Listing on page 80

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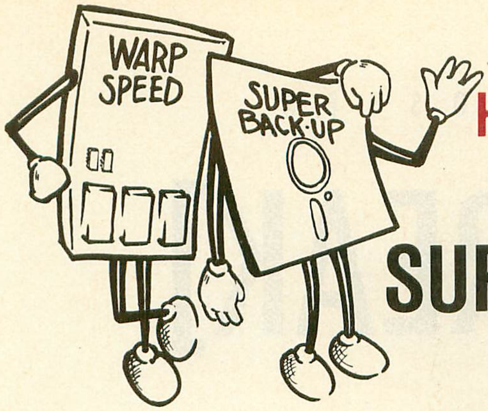
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BY BRUCE OWEN BLOSSER

All About [BREAK] Disabling

Short BASIC routine prevents crashes

If you have ever lost important information, or simply wasted time due to pressing the [BREAK] key by mistake, or if you would like to prevent your programs from being "crashed" by pressing the [BREAK] key, read on. Your solution is in the following article. Included is a short BASIC program that works on all 8-bit Atari computers of any memory size, with disk or cassette.

Since about 1982, all 8-bit Atari computers have had an operating system feature called the Break Key Interrupt Vector. (O.S. Revision A does not have it.) What this means is that there is a two-byte cell in memory (bytes 566 and 567) that stores the location of a small subroutine the computer jumps to and runs whenever the [BREAK] key is pressed.

To find out where this subroutine resides in memory, we do a PEEK at memory locations 566 and 567. If you have Microsoft BASIC or OSS BASIC XL/XE you can simply DPEEK(566) and get the answer. Otherwise you will need to PRINT PEEK(566)+256*PEEK(567).

If you have an Atari 800 you should get a vector handler location of 59220. If you have an 800XL or 130XE you should get a location of 49298. Although the routines are in different places they are exactly the same. This makes altering the handler much easier to do for either kind of computer.

Just exactly what does the subroutine do? It is in machine language, so if that doesn't interest you, skip a couple of paragraphs to where we learn about disabling the [BREAK] key.

Here is the source code:

```
LDA #0
STA $11
STA $02FF
STA $02F0
STA $4D
PLA
RTI
```

The program loads a zero into the Accumulator, which is the main register on the 6502 microprocessor. It then stores that value into four memory locations. The first location (BRKKEY, memory location $11) is a flag to indicate if the [BREAK] key has been pressed. The second (SSFLAG, location $02FF) is a flag to start scrolling on the screen. The third (CRSINH, location $02F0) is a flag to enable the cursor.

Fourth is a flag (ATRACT, location $4D) to reset or start the attract mode. That color-shifting onscreen when you leave your Atari keyboard for about seven minutes is the attract mode. It conserves your picture tube and has also been widely used in video arcades to "attract" customers.

Finally the routine returns control to your BASIC program. The whole process is actually pretty simple.

BREAK DISABLE

What does this have to do with disabling the break key? Well, the last two instructions in our vector interrupt handler will, if called, simply return control back to the main calling program, in effect disabling the [BREAK] key! To do this, insert a POKE 566, PEEK(566)+12 instruction at the beginning of your BASIC program and you'll disable the [BREAK] key. You better believe that's easier than POKEing two locations after every print statement.

It is also possible to keep prying

If you've ever lost important information or simply wasted time due to pressing the [BREAK] key accidentally, try this short BASIC program.

eyes from examining your BASIC programs by disabling the [BREAK] key, hiding the variable table, and forcing a cold start on [SYSTEM RESET]. See *Tech Tips* in the November, 1986 **Antic** for more details. This protection scheme will not prevent those rare persons with a thorough knowledge of BASIC tokens from deciphering your code, but it will keep out run-of-the-mill snoopers.

Keep prying eyes away from your BASIC programs: disable [BREAK], hide the variable table and force a cold start on [SYSTEM RESET].

If for some bizarre reason you wanted the graphics screen to go into attract mode every time someone pressed the [BREAK] key you could simply add one line to the assembler program we looked at earlier, store this new version of the break interrupt handler below in a safe part of memory, say Page 6, and then POKE this new handler location into the 16 bit interrupt vector, at locations 566 and 567.

The short listing which follows is a BASIC subroutine that you can use in your own programs to alter the break interrupt handler. To use it, simply LOAD the main part of your program into memory, making sure that the first line of your main program does a GOSUB 31000. Then ENTER this routine from disk or cassette (having LISTed it there earlier) or type it in. Remember to SAVE your completed program after you add this routine.

The routine is on the monthly disk under the filename BREAK.LST.

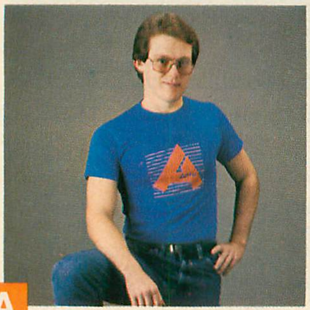
Whenever the [BREAK] key is pressed while your program is running, the screen will go into attract mode and the program will continue running. To alter this program so that the [BREAK] key is ignored but the screen does not go into the attract mode, simply change the number POKEd into 567 from 0 to 4.

```
31000 REM **Create New BREAK Handler
31010 REM **and Point To New Location
31020 POKE 1536,169:POKE 1537,128
31030 POKE 1538,133:POKE 1539,77
31040 POKE 1540,104:POKE 1541,64
31050 POKE 567,INT(1536/256)
31060 POKE 566,1536-PEEK(567)*256
31070 RETURN
```

Listing on page 83



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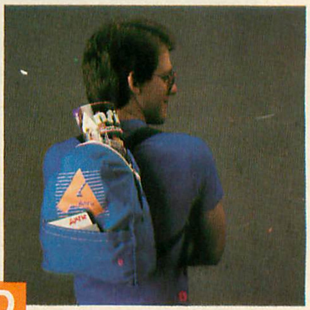
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New Owners Column

Lesson 13: Color Commands

***This series teaches beginners how to program in BASIC on all Atari 8-bit computers such as the 800XL and the 130XE. The first lesson appeared in the March, 1986* Antic.**

Last month we began presenting the Atari's graphics capabilities with an introduction to the graphics modes. This month, we'll look more closely at these modes and practice using them in our BASIC programs.

With a little planning, it can be quite simple to plot images on your screen. Essentially, all you have to do is tell your Atari the color and location of each dot you want drawn. Your Atari will move its drawing tool, (the cursor) to the proper spot and then draw the dot.

SCREEN COLORIZING

We need to look at the color commands first. The easiest and most widely-used of these is the **COLOR** command:

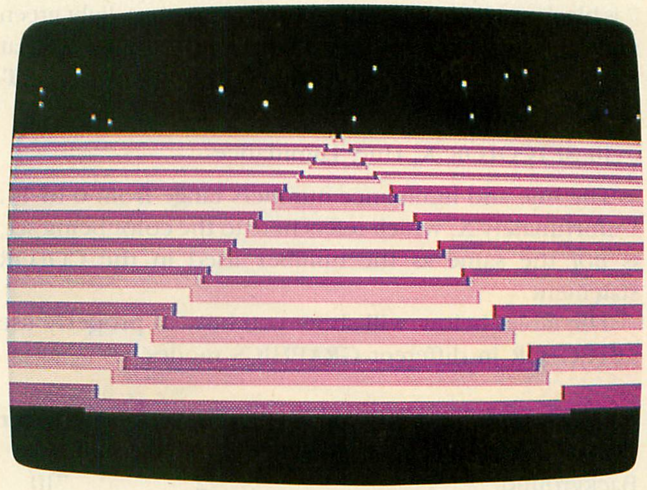
```
10 COLOR X
```

The above statement tells your Atari to draw with color X, where X represents a positive integer. Legal values for X depend on the number of colors available to you in the graphics mode you're using.

For two-color modes (GRAPHICS 0, 4, 6 and 8) X may be equal to 0 or 1. Here, 0 is the background color—handy for erasing.

For four-color modes (GRAPHICS 3, 5 and 7), X may be equal to 0, 1, 2 or 3. Again, 0 refers to the background color.

GRAPHICS 10 allows COLOR values from 0 to 8. GRAPHICS 9 and 11 allow 0 to 15. (Remember, these three modes do not allow text windows.)



PLOT AND DRAWTO

After you've chosen a color, it's time to position your dot on the screen. The **PLOT** command draws a dot of the chosen color at the specified screen coordinates:

```
10 GRAPHICS 7:COLOR 2:PLOT 10,15
```

The above example draws a dot in COLOR 2 at a point 10 steps from the left edge of your screen and 15 steps down from the top edge. The **POSITION** command is a variation of PLOT. It holds the cursor at the specified screen coordinates, but does *not* draw any points.

The **DRAWTO** command uses the current color to draw a line from the last known cursor position to the desired cursor position. Either PLOT or POSITION, or the final coordinates of the previous DRAWTO command, can be used to define the starting cursor position in a DRAWTO.

```
10 GRAPHICS 7:COLOR 2:PLOT 35,79: DRAWTO 78,0:DRAWTO 124,79:DRAWTO 15,20:DRAWTO 144,20:DRAWTO 35,79
```

The above example draws a star on your screen. You can also use COLOR, PLOT and DRAWTO in the

continued on next page

text modes described in last month's lesson.

The charts below give you the proper numbers to use with the COLOR command. You can then PLOT and DRAWTO using characters instead of points.

The following example will give you a line of "A" letters:

```
10 GRAPHICS 0:COLOR 65:PLOT 0,0:DRAWTO 10,15
```

CHOOSING COLORS

Your Atari can produce 16 **luminances** (shades) of 16 individual colors. All in all, this gives you 256 colors to choose from.

The Atari sets aside certain memory locations, called **color registers**, which store the colors referenced by the COLOR command. When you turn on your Atari—and every time you issue a **GRAPHICS** command—certain default colors are put into these color registers.

For example, COLOR 0 (the background color) in GR. 7 is black, and the three other colors are orange, light green and dark blue. But you can change these colors so that COLOR 1 is any color you please. The key is the **SETCOLOR** command.

```
10 SETCOLOR X, Hue, Luminance
```

The hue and luminance numbers range from 0 to 15. Unfortunately X, which refers here to the color being set, is *not* the same as the number used in the COLOR statement.

The tables below will show you how to properly use SETCOLOR in different GRAPHICS modes.

GR. 0 & 8	SETCOLOR	Register
Char/Dot luminance	1	709
Background	2	710
Border	4	712

For SETCOLOR 1, only the luminance data is used—the hue is ignored. In Graphics 8, COLOR 1 is the dot color, and COLOR 0 is the background color.

GR. 1 & 2	SETCOLOR	Register
Upper-case & Numbers	0	708
Lower-case characters	1	709
Inverse upper-case	2	710
Inverse lower-case	3	711
Background/Border	4	712

GR. 3, 5 & 7	SETCOLOR	COLOR	Register
Four colors	0	1	708
are allowed	1	2	709
	2	3	710
Background/Border	4	0	712

GR. 4 & 6	SETCOLOR	COLOR	Register
Dot Color	0	1	708
Background/Border	4	0	712

This system is not particularly easy to grasp, so keep these charts handy.

Modes 9 and 11 still use SETCOLOR 4 (register 712) for the background color. In Graphics 9, SETCOLOR 4 defines the single available color (luminance is ignored), while the COLOR command chooses between the 16 available luminances.

In Graphics 11, SETCOLOR 4 sets the luminance (and hue data is ignored), while the COLOR command chooses between the 16 colors, all in the specified luminance.

POKES NEEDED

Graphics 10, however, is a special case. Although it lets you use nine colors at once, you can only define five of them with SETCOLOR. The remaining color values must be stored directly in color registers.

With SETCOLOR, you can set five colors—SETCOLOR 0-4, COLOR 1,2,3,4, and 0; registers 708-712. The other four colors are stored in registers 704-707, with 704 being the background color. You can't set these colors with SETCOLOR—you must POKE the color data into them. The method below also works for the other color registers in all GRAPHICS modes.

To determine the number to POKE into a color register, use the following formula:

NUMBER = (HUE * 16) + LUMINANCE

For example, to put color number 2, luminance 4 into register 704, you would use the following statement:

```
10 POKE 704,2*16+4
```

Or you could use: `10 POKE 704,36`

Using SETCOLOR or POKE to change the colors in a color register is a very powerful technique known as **color indirection**. For example, if you draw something on the screen in Graphics 7 using COLOR 1 and then use SETCOLOR 0 to change the contents of the color register, *everything* drawn in COLOR 1 will change to the new color.

THE LISTING

This month's listing uses all our new commands to draw a striped interstellar landing strip which appears to move. You can control the "speed" of the landing strip with a joystick plugged into port one. Push the stick forward to speed up, pull it back to slow down.

The image seems to move because the program sequentially interchanges the values in the color registers. Stripes originally drawn in COLOR 1 now look as if they were drawn in COLOR 2, stripes which were originally drawn in COLOR 2 now appear in COLOR 3, and so on. This technique is called "color rotation."

Type in Listing 1, NEWOWN13.BAS, check it with TYPO II and SAVE a copy before you RUN it.

Next month, we'll conclude the New Owners Column by showing you how to add sound to your programs. Coming issues will present a new series of lessons about programming animation graphics on the 8-bit Atari.

Listing on page 86

5th
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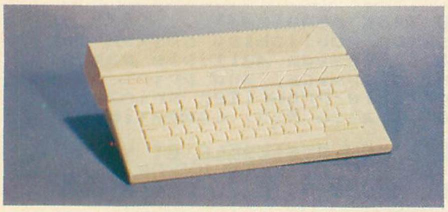
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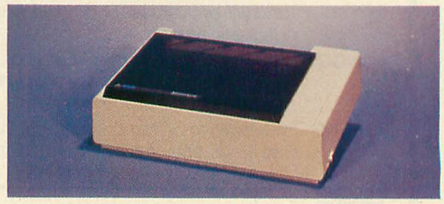
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BY BILL MARQUARDT AND GREGG PEARLMAN

ICD Boosts 8-bit

800XL gets more muscle than an ST

What does ICD stand for? "I Can't Decide," says company president Tom Harker. A better guess would be Innovative Computer Design, but that name belongs to another Illinois company. The right answer is that ICD doesn't stand for anything—except state-of-the-art support for Atari 8-bit computers.

Right now at **Antic** we are running an Atari 800XL that actually has *more memory than a 1040ST*—and costs less too! This high-powered setup is turbocharged with the latest generation of ICD enhancements. It uses their brand new 1Mb **Multi I/O Board** plus the 256K **RAMBO XL** memory upgrade. Its operating system is ICD's speedy **SpartaDOS** (version 3.2) and it displays a real-time clock/calendar with ICD's piggybacking **R-Time 8 Cartridge**. Also plugged into this super XL is a 15Mb Lurie BTL Hard Disk system (reviewed in detail in a nearby story).The heart of this Super 800XL is ICD's **Multi I/O Board**—the most impressive add-on product for the 8-bit line we've seen in years. The Multi I/O plugs into the parallel bus at the back of your Atari 800XL or 130XE (the 130XE requires a $19.95 adapter) and gives your computer the following five features.

1. Parallel printer interface.

2. Serial interface for modem or printer. (Both the parallel and serial interfaces use cables compatible with the Atari 850.)

3. One megabyte of memory ($349.95), or 256K memory ($199.95). Built-in ROM software lets you partition this memory into multiple RAMdisks in the sizes of your choice. The Multi I/O has its own power supply and can retain information even when the computer is shut off. It consumes less than two watts, so the electric bill won't break you. Only a power failure will wipe out your RAMdisk.

RAMdisk stays on with its own power

4. You can reserve any RAMdisk as a Printer Spooler that works with either of the interface ports.

5. The Hard Disk interface can support eight SASI and SCSI controllers at once, using standard 5 - 1/4 inch and/or 3 - 1/2 inch hard drives. Since ICD's SpartaDOS can access 65,536 sectors (16 megabytes per drive), you can now have up to 128Mb of storage. If you need more, buy a DEC VAX computer.

Holding down [SELECT] while booting puts you into the Multi I/O's built-in program, from which you can set up your drives and give them any designation. For instance, you can configure drive 2 as drive 1. You can even boot your system from a RAMdisk, believe it or not.

MORE ADD-ON POWER

Promised soon for the Multi I/O Board is ICD's **80-column Adapter** ($99.95) which will support both monochrome and composite color monitors. The adapter plugs inside the case of the Multi I/O board. Also coming is an ICD word processor that will support the 80-column Adapter.

RAMBO XL ($39.95), a 256K memory upgrade for the Atari 800XL and 1200XL, was reviewed in the July 1986 **Antic**. Rambo sets up a 130XE-compatible 192K RAMdisk that runs current 130XE software such as

continued on next page

AtariWriter Plus on your XL. The 130XE version of PaperClip (Batteries Included) supports RAMBO's full 256K, loading the entire spell checker into memory for rapid-fire operation.

ICD's handy new **R-Time 8 Cartridge** ($69.95) is an automatic real-time clock/calendar that plugs into your cartridge port. It can accept another cartridge into its built-in slot, and its battery should last three to five years. The R-Time 8 uses no cartridge memory and is decoded in memory locations $D5B8-$D5BF. R-Time 8 also supports BASIC, Pascal, AMODEM 7.2R and 1030/850 Express. While the R-Time 8 will work with any Disk Operating System for the Atari, it is most effective with SpartaDOS.

SpartaDOS stamps the current time and date on all files as you save them, keeping track of your latest versions. A simple command displays the time and date at the top of your screen. A software real-time clock is written into SpartaDOS, but it's less accurate than the R-Time 8 and must be reset every time you turn on your computer.

SPARTADOS 3.2

SpartaDOS, version 3.2, ICD's newest disk operating system matches the best features of DOS/XL from OSS, Inc., but also adds hard disk access and other useful capabilities. Versions 3.2, 2.3 and 1.1 are all included in the **SpartaDOS Construction Set** ($39.95), along with a full collection of supporting utilities.

On an Atari 800XL with 256K upgrade, a simple SpartaDOS command actually installs and initializes a 192K RAMdisk from the additional memory. Virtually every available memory upgrade is supported, including the Axlon RAMdisk for the Atari 800.

The SpartaDOS Construction Set is extremely versatile and powerful. It will read and write to DOS 2.0 and 2.5 disks with no problem. The software comes with a comprehensive 161-page manual and 36-page supplement.

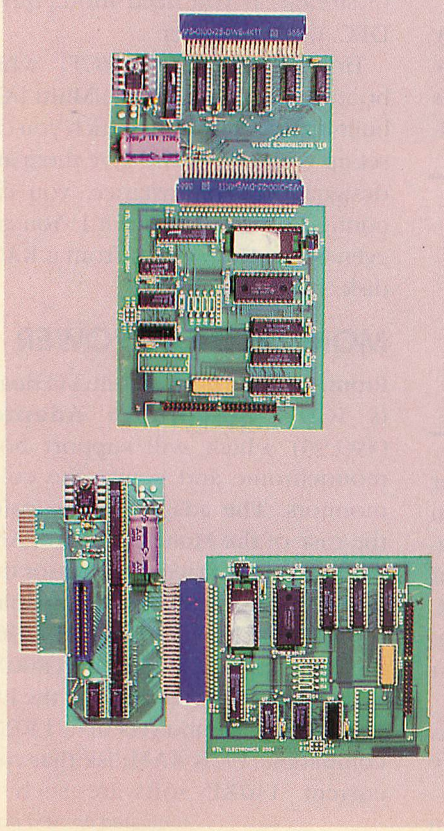
In the command processor mode, familiar to DOS/XL users, type in the appropriate command at the prompt, such as COPY D1:FILE D2:FILE. If you prefer a more familiar menu environment, such as that found in DOS 2.0, just type MENU. In SpartaDOS menus, instead of using wildcards, you can cursor through the filenames and "tag" the ones to copy or delete. This makes multi-file copying a one-step operation.

If you accidentally boot with BASIC on your XL or XE, just type BASIC OFF instead of rebooting. BASIC ON reverses the process.

Another especially nice feature of this DOS is its ability to process a batch file at start-up. An example of this would be to initialize the time and date line, set up your extended memory as a RAMdisk and disable BASIC. You can execute a batch file on disk at any time just by typing in a hyphen and then the file name.

SpartaDOS is memory resident, meaning that you don't need a DUP.SYS file. Switching between BASIC, MAC/65 and DOS won't erase the program in memory unless you use one of the commands, such as COPY. ASCII files can be printed to the screen from disk easily with the TYPE command.

The only minor quirk we have



BTL Hard Disk System

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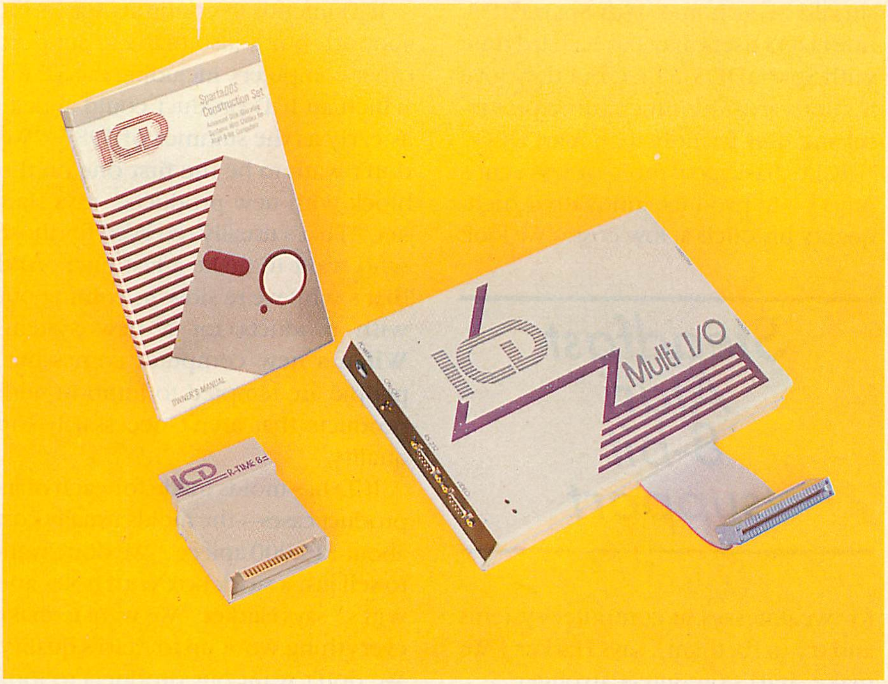
Reviewed by Bill Marquardt

Antic first saw BTL Hard Disks in action at the San Jose Atari Expo in September 1986. The system combines standard hard disk units with BTL's own customized Atari interfaces. The BTL 2001 (for 800XL) or 2002 (for 130XE) connect to the computer's parallel bus slot. The BTL 2004 Hard Disk Adapter attaches to a standard SASI hard disk controller—and supports one or two hard drives for a potential total of 128 megabytes of information storage. BTL packages complete hard disk systems up to 60Mb. Or you can supply your own hard disk and just purchase the adapter and connector.

BTL ships the hard disk and its case in two separate boxes. Assembly takes just a couple of minutes and consists of connecting a few plugs and installing four screws. Our advance unit came with a preliminary version of the documentation, which is thorough and easily understood.

Insert a 2001 or 2002 connector into the back of your XL or XE. The hard disk adapter plugs into the rear of the connector. You will need approximately ten inches of clear space at the rear of your computer to accomodate the boards. The boards are not enclosed in anything, so a nice upgrade would be a high-quality plastic case.

For clarity, the rest of this review will refer to these two boards together as "the interface." The interface receives its power from a small DC adapter which plugs into an electric outlet. A 50-pin ribbon cable from the hard disk controller plugs into the interface.



ICD's three major new support products for 8-bit Atari computers.

found in SpartaDOS 3.2 is that while working in machine language with the OSS MAC/65 assembler, you'll get a mysterious error message if you attempt a disk-to-disk assembly of a large program. To fix this, write a short program that INCLUDEs all the necessary files and assemble with this program in RAM.

SpartaDOS is ICD's longest-established product. It supports true double density storage and extra-fast disk I/O in conjunction with the **U.S. Doubler** ($39.95), a hardware upgrade for the Atari 1050 disk drive. Because SpartaDOS works with different disk formats simultaneously, it is ideal for transferring 5 1/4 inch floppy files to 3 1/2 inch disks (whenever Atari brings out 3 1/2 inch drives for the 8-bit computers.

P:R: CONNECTION

The Multi I/O Board was actually designed in response to many requests on ICD's warranty cards for the **P:R: Connection** ($89.95). This inexpensive replacement for the no-longer-made Atari 850 Interface Module was a major breakthrough for 8-bit Atari users in 1986, again making it easy to connect Ataris to standard printers and modems.

The compact 4×6 inch P:R: Connection (reviewed in **Antic**, October 1986) provides one Centronics parallel port and two serial ports. It uses the same cables ($14.95 from ICD) as the Atari 850. Drawing power from your computer, it doesn't require its own outlet. There's a built-in R-

continued on next page

The BTL drive comes already formatted, so you should now be able to turn on the hard disk and—as soon as it comes up to speed—boot from it by switching on your Atari.

If you are using your own hard disk, instead of a hard disk sold by BTL, you may need to format and partition it. Partitioning is simply a process of dividing disk space so that the computer thinks of it as separate disk drives of selected sizes. The interface can handle as many as eight logical drives (partitioned disk sections) of up to 16 megabytes each. That's the potential 128Mb maximum again.

The interface comes with its own firmware and uses none of your computer' memory. To start the formatting and partitioning program you must turn off the computer and move a small switch on the interface. After turning on the computer again, you will see a menu from which you select an operation to perform. The documentation helps you through this process, which is really not difficult. Numbers are entered in hexadecimal, so you will need to be able to convert decimal sector counts into hex. The latest version of the firmware includes a head parking command which you should use any time you transport the drive.

After logical drives are partitioned, you will need to format them—either with MYDOS which is supplied by BTL, or with ICD's SpartaDOS 3.2 (reviewed in the adjoining article). Both Disk Operating Systems work fine with the BTL Hard Disk. MYDOS requires reconfiguring your drive assignments, which is one of its menu options. In the event you do have trouble setting up your system, a tech line is available for assistance from the company.

Once your system is in place and working, you will be delighted with the speed of transfer and the vast amounts of disk storage space you now have. Turning on your Atari with the [SELECT] key pressed will allow you to boot from your floppy drive 1 as usual. Our version of the firmware simply replaces the floppy for logical drive 1 from the hard disk. But the latest version actually "bumps up" the drive numbers by one, so that hard drive 1 would now appear to your computer as drive 2 and would still be available.

The BTL Hard Disk System is a good product that merits your consideration. We have found its performance to be reliable and efficient, at a competitive price that brings hard disks within reach of many 8-bit Atari users.

BTL HARD DISK
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P.O. Box 7546
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(818) 780-1723
Requires Atari 800XL or 130XE
$550—10Mb with MYDOS
CIRCLE 169 ON READER SERVICE CARD

handler with complete documentation for the RS-232 driver source listing.

The **Printer Connection** ($59.95), due in January 1987, is the baby brother of the P:R: Connection, containing a single parallel interface. It prints PrintShop graphics.

ICD START-UP

Tom Harker started ICD in his basement in Rockford, Illinois, with Mike Gustafson, who then lived in Minneapolis. The company was incorporated in 1984, with Harker as president and Gustafson as vice president in charge of development.

ICD's first products were the U.S. Doubler and SpartaDOS. "At first, SpartaDOS was almost impossible to market by itself, which is why we packaged it with the U.S. Doubler," says Harker. "People love hardware—it lasts longer than software—and the products are as enthusiastically received today as they were when we first started selling them."

Harker explains, "SpartaDOS is a lot like MS-DOS and somewhat like CP/M, so users of those systems should be at home with SpartaDOS. Atari DOS users may have a hard time with SpartaDOS at first, but they love it afterwards. It's much more powerful and user-friendly than Atari DOS."

ICD's basic goal more or less echos Atari's—to produce innovative, high-quality products at low cost. "We look for weaknesses in computer systems and try to fix them," says Harker. "We make Atari computers stronger."

Steadfast Atari 8-bit support

Harker considers his company close to Atari, having visited them at Sunnyvale several times. "We've exhibited our products in Atari booths at trade shows and they've supplied us with any information and schematics we need about their computers."

ICD intends to continue Atari 8-bit support, but it also plans to support other computers, including the ST, for which an ICD product could appear as early as the summer of 1987. "We don't want to be the first one on the block with new products," says Harker. "That's usually reserved for those who want to make a fast buck. And that's why we're slow in coming out with products for a new system. When a new computer comes out, people are tempted to jump in with products that aren't necessarily top quality."

ICD has molds made for each of its product cases—the molds usually cost about $15,000 apiece. "We don't want to sell just a stock box with holes and wires," says Harker. "We want to make everything work up to Atari's quality. We don't want our products to look like a hobbyist's expansion."

ICD does all its own product design—unusual for a hardware company. Harker says that's why ICD has been able to make money and be profitable since day one. "We have a good, loyal following. Many other hardware companies just market products that are developed by outside people."

Including Harker and Gustafson, ICD has 10 employees: five assemble, produce and ship the products, and the rest work in the office and also do product development. All products are made in-house except for ICD's interface cables.

"We have people on the phones at almost all times, including me," says Harker. "Customers can speak directly to the company president. We have a 24-hour BBS with technical information and files to download. We also spend time on Delphi and CompuServe answering questions about our products, and we hope to get on GEnie too."

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—*Byte Magazine*

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—*John Dvorak, San Francisco Examiner*

"Since the pinouts are standard, it is also possible for various software packages to support an even wider range of output devices—even faster printers and high-end plotters." ***—Microtimes***

"The ST is noticeably faster than the Macintosh, not only because of the faster clock rate but because it has a faster disk drive." —*Personal Computing*

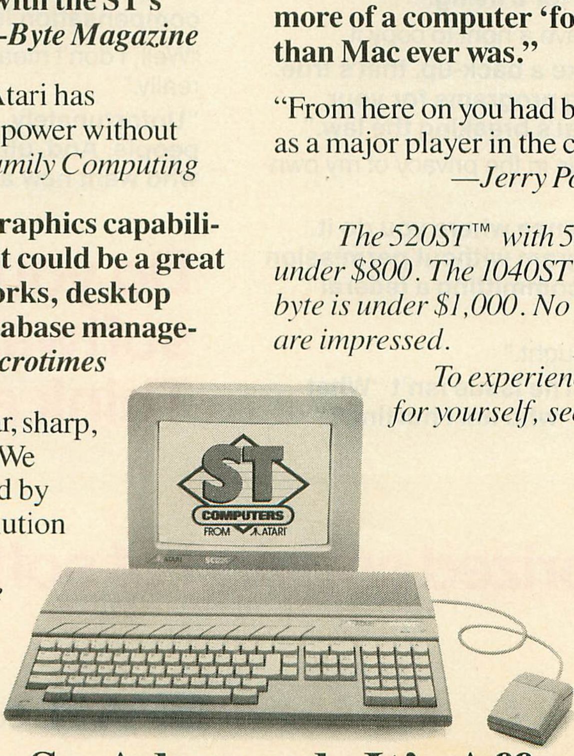
"The ST is an amazing bargain, much more of a computer 'for the rest of us' than Mac ever was." ***—Byte Magazine***

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—*Jerry Pournelle, Infoworld*

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Taxman

Beat those IRS blues

BY ROBERT PATTON A.K.A., ''RASSILON''

All taxpayers feel a bit boxed-in as April 15 approaches, but playing Taxman just might help relieve your tension.

To cut down on your tax bill, you have opened five savings accounts at an *unusual* Swiss bank. Now you must grab the interest from your accounts as fast as possible. But watch out—because a crack team of IRS field auditors is breathing down your neck. Get caught once and you'll have to declare the interest. Get caught 10 times and you'll be audited—the game's over!

Grab your money—evade auditors

We warned you that your Swiss bank was unusual. First of all, the only way to collect your annual interest is to race around the bank vault and pick up those stacks of greenbacks. But what's really peculiar is the way your interest earnings are figured. This is the formula: The number of times you must cross a stack of dollars to remove it equals the account number, which also equals your interest rate.

Therefore, Account 1 requires just one pass over the green rectangles representing dollar stacks and each stack is worth $1. Account 2 (the second screen) requires two passes, but pays $2 interest per stack. Account 5



Steve Campbell

Collect your shrinking stacks of dollar bills from five secret Swiss bank accounts without running into those dangerous tax auditors. This BASIC program works on all 8-bit Atari computers with at least 48K memory, disk or cassette.

continued on page 41

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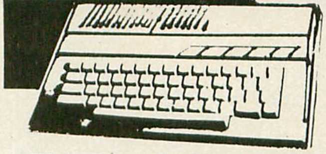
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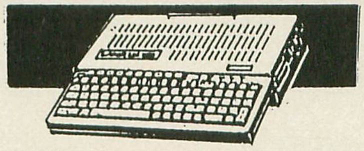
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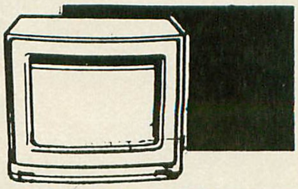
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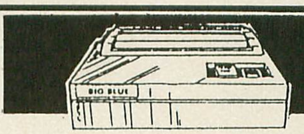
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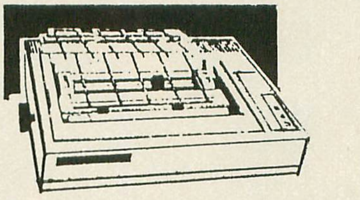
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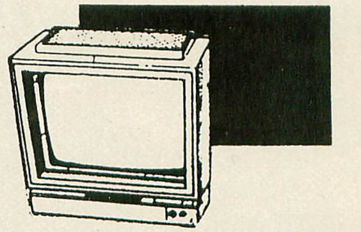
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TAX REFUND
IRS

Antic's third annual SynCalc 1040 template

'86 Federal Income Tax Spreadsheet

BY TOM CHANDLER

Antic's two previous Federal Income Tax Spreadsheet Templates have been among our most popular annual features. Now you can do your 1986 federal income taxes on your 8-bit Atari. (ST Owners will find a VIP Professional template for calculating their 1986 federal taxes in the Spring 1987 issue of START.) Requirements for running the 8-bit Atari template are minimum 48K memory, a disk drive and SynCalc spreadsheet software ($49.95) from Broderbund. A printer is optional, but you'll need your official Internal Revenue Service 1986 tax instructions and forms.

It's "that time" again—time to get out your shoeboxes full of receipts, cancelled checks, etc., sit down with your Atari 8-bit computer and calculate your income tax forms. This still won't be much fun, but at least it's a lot less hassle when your Atari and the SynCalc spreadsheet ($49.95, Broderbund Software) do the number crunching—and make it easy for you to experiment with various alternative "what if" strategies for minimizing the taxes you owe.

The Third Annual **Antic** Federal Income Tax Spreadsheet Template includes:

1986 IRS 1040 Long Form
Schedule A (Itemized Expenses)
Schedule B (Interest and Dividends)
Schedule C (Business Income and Expenses)
Schedule G (Income Averaging)
Schedule W(Working Couples)
Form 2441 (Child Care Deduction)

We use SynCalc software for the **Antic** tax templates because SynCalc is still the most popular spreadsheet for 8-bit Atari computers. If you don't have a printer, you can just hand-copy the figures from the screen to your printed IRS forms.

Even if you've never used SynCalc before, you should be able to work through the well-written manual in a few hours and learn enough to use this tax template. But you're leaving yourself open for unnecessary aggravation if you try to start working on the tax template without taking enough time to become adequately familiar with SynCalc.

Please, if you need help with SynCalc, phone Broderbund's Customer Service at (415) 479-1170, not **Antic**! However, if any last-minute fixes are needed in the template itself, the information will be on CompuServe's ANTIC ONLINE. (Type GO ANTIC when you log onto CompuServe.

continued on next page

Steve Campbell

Then choose the Mailbox selection from the main menu and go to the Error Log section.)

Yes, your online time-charges for accessing tax preparation information are still tax deductible. So is this issue of **Antic** and the monthly disk. Even the cost of your computer and SynCalc will be tax-deductible—if you purchased them last year. But all this changes on next year's returns, sorry.

Please be careful: if you doubt the accuracy of the template findings, check with a registered tax preparer. User and programmer errors are always a possibility. **Antic** can't take responsibility for any mistakes made in your tax return as a result of using this template.

TAX SPREADSHEETS

Spreadsheet programs are an ideal tool for preparing tax returns. You type in personal data such as income and deduction amounts, and customized formulas tell the spreadsheet how to compute the tax obligation from your data. Each data element or formula is entered in a "cell" with an address—similar to the lines and columns on the tax form. As your data changes (if you find another receipt, for example), just go to the proper cell, type in that number and press [START]. Your entire tax return will begin to recalculate.

Important: please remember that SynCalc calculates by rows or columns—so this template must be calculated at least *five times*. Press [START] five times after changing any figure.

You'll need the official 1986 Internal Revenue Service tax instructions and forms nearby. There isn't enough Atari memory to duplicate the forms exactly, so abbreviations are used wherever possible. But the template follows IRS line numbers, so you won't get lost.

After you enter the information into the spreadsheet, it calculates every line except the actual tax you owe. Putting all the tax tables into the template would chew up memory and typing time. So when you determine your Net Taxable Income on the template, look up the matching tax obligation in the Tax Table or Tax Schedule in your IRS instruction booklet.

The spreadsheet template can be reused for many different 1986 tax returns if you retain a blank version on disk. Entering a taxpayer's personal data should take about an hour. Save each completed tax template under a different filename.

This long, narrow template consists of some 235 rows (out of a possible 255) by seven columns. You *don't* need to type in any schedules or forms that you won't use—the 1040 form will work without them. If you type in template sections that you later decide not to use, just leave those sections blank and they won't become part of the overall calculations for the return.

TEMPLATE TYPE-IN

Antic Disk owners will find this template on the monthly disk under the filename TAX1040.SC. You'll need to boot SynCalc before loading TAX1040.SC.

For the purposes of this article, I must assume that you're familiar with SynCalc. For instance, you should know that pressing [OPTION] starts a command sequence, how to move around within the spreadsheet, etc. Keep your SynCalc manual handy.

Format a blank disk for data. Before typing anything in, set all column widths to seven. Set GLOBAL FORMAT to PRECISION 0 (to round off cents to the nearest dollar) and COMMA (to insert commas in numbers like 1,000). To speed up data entry, issue the command GLOBAL RECALCULATE MANUAL. Also, set calculation to ROWS.

To simplify template entry, the IRS form line numbers are in column A and the text descriptions are in column C, with overflow to columns D and E. The actual figures and formulas are in columns F and G. While entering titles in columns A and C, set FORMAT JUSTIFY LEFT. When entering the numbers and formulas in columns F and G, set FORMAT JUSTIFY RIGHT.

The template is separated into six sections, one for each tax form or schedule. Each section has two parts. Part A is the format set-up: titles, labels, etc.—with zeros (0) temporarily standing in for your actual number and formula locations. Part B contains the formulas. I'd suggest starting at cell A1 and working down column A using SynCalc's automatic cursor movement. Then go to column C and enter the titles. If a title exceeds seven characters, type it in anyway—SynCalc's overflow feature handles the over-long material automatically. (But you need to erase each overflow cell manually if you move the title.)

You might consider typing in and testing each section before proceeding to next one. Part A of each section starts with the SynCalc row number. *Don't* type in these row numbers. The tax form line numbers are under the dashes for column A. You must enter all numbers and formulas in the *exact cells* shown, or else the template won't work.

Here's a data compression tip: SynCalc uses 16 bytes to store every number. Text entries take only four bytes, plus one byte per character. Unless you use a number in a calculation, enter it as text. In fact, all form line numbers *must* be text. Start each entry with quotation marks or you'll run out of memory.

The last step in Part A is to enter all the zeros. The zeros "hold open" the cells for formulas and values to come later. Most zeros are in columns F and G. As you enter them, use this undocumented tip: the /K command toggles automatic cursor movement on and off. Also, you can move the cursor arrows in a menu without holding down [CONTROL].

Now that the template format is typed in, use Part B of each section for cell formulas. The listing shows each cell address, followed by the entry. *Don't* type the cell addresses (such as G169) shown in the first three or four spaces at the left. Instead, *go to* that cell and type in the formula, typing over the space-holding zeros entered earlier. A formula element like E179 is not text—type it as "+E179" so that SynCalc will know it's a numeric entry. As you enter each formula, protect it with a /FO (FORMULA PROTECT ENTRY) so you

won't accidentally write over it.

TIPS & TRICKS

Because this template pushes SynCalc to its limits, you'll need to use some advanced spreadsheet operation techniques in order to get everything working properly. The six template sections barely fit onto a single spreadsheet. Since SynCalc occasionally wastes a few cells, if you get the famous ERROR 100 NOT ENOUGH MEMORY message, save the file immediately. Now erase the file in memory with the /E command and then reload the file from disk. This save/erase/load process deletes unnecessary entries.

To squeeze in long cell formulas, don't type spaces between words. Even more importantly, when you first type in the formulas, leave out words like THEN, ELSE or LOOKUP. Then press [RETURN]. You'll get a SYNTAX ERROR message because of the missing words, but go back and enter those words with the [CONTROL] [INSERT] keys. This lets you put an "illegal" amount of characters into a cell. The final characters will be pushed off the screen, but they're still in memory. (There are limits, of course—don't insert more characters than you need to.)

After you correctly type in the complete spreadsheet template, remember to save a blank copy under a name like BLNK1040 before entering any taxpayer data. Loading that blank file lets you do returns for many different taxpayers—just save each return with a different filename.

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Tom Chandler has a degree in finance and is employed in the accounting department of Antic Publishing, Inc., where he does a lot of his work on an ST with the VIP Professional spreadheet.

IF YOU'D ENJOY SEEING MORE ARTICLES LIKE THIS ONE, CIRCLE **157** ON THE READER SERVICE CARD.

Listing on page 75

TAXMAN
continued from page 35

needs five passes, but pays $5 per stack.

You also get a bonus when you clear all the interest out of an account. The bonus is $100 multiplied by the account number, multiplied by your remaining taxpayer chances. For example, you get $255 for removing the 255 stacks in Account 1. And if you have five taxpayer chances remaining, you get a $500 bonus for completing the screen.

Interestingly, as the account number increases, the number of money stacks you must grab *decreases.* If this seems like an advantage, just wait until you try Account 5. Oh yes, and the higher the account number, the faster the auditors chase you.

HELPFUL HINTS

The pattern of the auditors' movements is predictable and unvarying—only their speed changes. Learn to time your joystick movements—this takes practice. You can move diagonally and sometimes that is your only hope.

The screen will wrap if you press the fire button when you hit the edge. This may seem strange, but you'll soon see that it is a very helpful evasion technique.

THE PROGRAM

To challenge the IRS, type in Listing 1, TAXMAN.BAS, check it with TYPO II and SAVE a copy before you RUN the program.

If you have trouble typing the special characters in lines 540 and 580-630, don't bother typing them in. Instead, type in Listing 2, checking it with TYPO II, and SAVE a copy before you RUN it. When RUN, Listing 2 creates these tricky program lines for you, and writes them to a file called LINES.LST.

Once this file has been created, type NEW and then LOAD Listing 1. Next, ENTER D:LINES.LST. (Cassette users type C: instead of D:) This merges the two program fragments into one complete program. Remember to SAVE a copy of the completed program before you RUN it.

I wrote this program mainly to present some useful, versatile BASIC and USR routines. I kept Taxman as short as possible, while including as many special features as I could. The Taxman game uses:

- Player/Missile graphics
- An altered character set
- Machine language routines for speed
- Boolean logic joystick routine
- String storage for P/M data

I didn't write the public domain machine language routines used here.

The most unusual Swiss bank ever

If you're not already familiar with these routines, you'll find them useful for your own programming efforts.

The (Z)ero routine fills a page of memory with zeros. For example, in line 660 it zeros-out the page beginning at address PMM.

The (M)ove Memory routine moves any number of bytes from one part of memory to another. In line 650, for example, the routine copies the computer's character set (starting at address CS) into a 1024-byte section of RAM beginning at address MYCS.

The (R)otate routine rotates a sequence of bytes with a mask constant, to move the missiles vertically. (E)xplosion stores the data for the explosion display. I also added a slight change in the P/M size during the explosion, it occurs at line 280 when you must declare your interest.

*Rassilon (Robert Patton) is a Natchez, Mississippi programmer who took his pseudonym from public TV's "Dr. Who." Rassilon can often be found on CompuServe's SIG*Atari and is happy to receive your electronic mail at 70057,674.*

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Listing on page 79


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HOW TO WIN We are looking for the most powerful, versatile, easy-to-operate programs that perform useful jobs in the real world. The more uses for your software, the better. For example, a stuffed-animal database for taxidermists would probably be considered too specialized by the magazine's judges—no matter how excellently it is programmed.

The winning software must be user-friendly, most likely menu-driven wherever possible. Users should not need programming knowledge in order to successfully operate the application programs.

Please note that some of the other popular Atari program categories—such as utility routines that add power when inserted into your own programs—cannot properly be considered applications. Practical application programs should be complete, stand-alone software that does an entire user-controlled job from start to finish. For example, a drawing or painting program would be a practical application—a colorful graphics demo would not!

TECHNICAL RULES Programs must run on the Atari 800, 800XL and 65XE models and require no more than 48K memory. However, programs that *also* take advantage of the extra memory in the 130XE will be given preference.

Programs must be written in standard renumberable Atari BASIC or MAC/65 assembly language, under a disk operating system compatible with Atari DOS 2 or 2.5. Program listings cannot be larger than 150 sectors of a single-density disk.

Thorough error-trapping is very important. Your program should not crash every time a user accidentally presses the wrong key. And please do not include authors' copyright statements in your listing.

JUNE 15, 1987 All entries in the **Antic** 8-Bit Practical Applications Competition must be received by June 15, 1987. Winners will be announced in the November, 1987 issue of **Antic**. Judges' decisions are final.

Entries—programs and accompanying articles—should be submitted on disk *and* in printout. Entries will be returned only if the author provides a stamped, self-addressed envelope.

Send entries to:

Practical Applications Competition
Antic Magazine
524 Second Street
San Francisco, CA 94107

All 8-bit practical application programs accepted for publication by **Antic** between November 1, 1986 and June 15, 1987 will also be automatically evaluated as potential prizewinners in the contest.

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Baudville
1001 Medical Park Drive S.E.
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$29.95, 48K disk
CIRCLE **150** ON READER SERVICE CARD

Reviewed by Gregg Pearlman

Do you have that Midas touch at the gambling tables? If you're like most of us, the answer is "no." But Baudville's **Video Vegas** gives you the chance to be a big winner without actual monetary expense (or reward).

Note that there's only the *chance* to win big. Unless you have the gaming experience and necessary savvy—or incredible luck and perseverance—you'll do little better than break even. But you'll get plenty of inexpensive practice at Blackjack, the Lucky 7 slot machine, Keno and Draw Poker.

Blackjack's rules and hints occupy over four of the seven pages in the documentation. Video Vegas Blackjack includes a card-counting tutorial, so you'll have a better chance to beat the odds when you're playing with real money. In fact, the game counts cards *for* you, in case you lose track. One method just counts aces, ten-values (four and 16, per deck, respectively) and total cards played. For example, since you'd expect to see an ace for every 13 cards played, expect to see one soon if 13 cards are dealt without an ace appearing.

A more complex method is counting an ace or ten-value as *minus* one and and threes through sevens as *plus* one. Twos, eights and nines are worth zero. A running count of +5 or better means the deck is rich in aces and ten-values, favoring the player. If the count is -5 or less, the deck favors the dealer.

But Blackjack is still tough to win. Playing 100 hands of Blackjack, strictly by Video Vegas' rules, I won 43, lost 51 and had six pushes (ties), dropping an imaginary $40 in the process. Using the same rules with the Blackjack game in MichTron's Cards on the ST, however, I went 45-38-17, picking up $70. One main difference is that Cards recognizes a Five-Card Charlie (where a five-card hand under 21 wins automatically), but Video Vegas doesn't. And disproportionally often, it seemed, the Video Vegas dealer would draw exactly the card necessary to win.

Video Vegas' Lucky 7 slot machine really gives you that feeling of chasing a carrot on a stick: pump in some coins, lose, win a bit, lose, lose, win some more, lose, lose, lose, etc. You'll win enough to stay interested for a while, but not enough to keep you waiting around for Wayne Newton's next show. Supposedly the payoff for the Lucky 7 is $98 for every $100 you play, but I found that hard to believe.

Draw Poker resembles actual video poker machines, allowing a $1 to $5 bet per hand and paying off on a pair of jacks or better. The better the hand, the better the payoff, with a maximum of $5,000 on a $5 bet for a royal flush. But decent hands are hard to come by.



The Keno layout has 80 numbers. You bet $1 to $5 and then select up to 15 numbers. Twenty numbers are drawn at random. The more correct numbers you've picked, the bigger the payoff (with a $50,000 limit). The odds of winning, as you might imagine, are poor, and the visual display is uninteresting. Any excitement in actual Keno is lost in this version.

The card game and slot machine graphics are colorful. Each game has odds charts, which help you determine your bet. Blackjack is the best of the four, but poker, slot machine and Keno enthusiasts will enjoy those games as well. Overall, Video Vegas provides a reasonably accurate simulation of what it's like to play these games in a real-life gambling casino.

MERCENARY

Datasoft
19808 Nordhoff Place
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$29.95, 48K disk
CIRCLE **254** ON READER SERVICE CARD

Reviewed by Gregg Pearlman

You crash-land on a planet and the game starts. In **Mercenary**, you're a 21st-century soldier of fortune, and you've been lucky enough to land on the war-ravaged planet Targ, home of the organic Palyars and their robot adversaries, the Mechanoids. Whom you side with in this graphics adventure game is up to you.

Accompanying you is Benson, a portable computer that tells you what's going on (in a limited way). You'll meet the Palyars first—you won't see them, but you'll meet them. This happens *after* you buy a new ship and maneuver it from the Centrepoint Airport to a large elevator nearby.

You'll wind up on foot in one of the Central City Subterranean Complexes. From there you'll have to find the Palyars for a briefing, picking up odds and ends along the way—energy crystals, photon emitters (flashlights) and cheese. As you explore the underground realm, you'll encounter mechanoids from time to time.

The interior of the complex is something to see. There's a virtual labyrinth of differently colored rooms, from Palyar and Mechanoid briefing rooms to hangars to banks to hallways. There are also about 30 transporters to encounter. You'll have no way of knowing beforehand where

you'll end up, but a pattern will become evident. You ought to make a copy of the supplied underground map and take notes about about each room as you encounter it.

The visual detail of these areas isn't much, but the scope of the maze and the first-person 3-D effect is awesome. True, the viewpoint takes time to get used to—on Targ you'll evidently have severe tunnel vision. Peripheral vision is nil and you'll find yourself walking into walls.

However, you won't get hurt. There's no need to worry about injury or death, because Datasoft wants you to *play* Mercenary, not just continually start over every time you die in a crash-landing, get shot, or walk into a wall. If a situation becomes unbearable and there's no way out, pressing [CONTROL] [Q] is your escape. However, you'll find yourself above ground again and stripped of your possessions.

All this assumes you can successfully navigate your ship to an elevator in the first place. The sparse documentation tells you how to read Benson's compass, a gauge that gives numbers from 00 to 90 and changes colors to let you know what direction you're headed.

Monochrome monitor owners are out of luck. But color owners can't rest easy, either. As you turn clockwise, the colors should change from green to black to blue to red. Don't be surprised, however, to see dark blue, red, lighter blue and red again. You can adjust your color, tint, brightness or contrast controls and you still might not know whether you're coming or going.

About the only way to get around this while in flight is to depend on the location monitor. Suppose you start at location 8-8 and have to go to 9-5. All you can do is keep either 00 or 90 dead-centered on your compass and change direction as the location numbers change.

Mercenary's video effects make it a good game overall. But if you aren't in the right place to pick up the right clues, you'll get nowhere.

WIZARD'S CROWN

Strategic Simulations Inc.
1046 N. Rengstorff Avenue
Mountain View, CA 94043
(415) 964-1353
$39.95, 48K disk

CIRCLE **265** ON READER SERVICE CARD

Reviewed by Harvey Bernstein

Software companies have been hard-pressed to come up with something new in role-playing fantasy games for Atari computers. The Ultima series provided new depths of characterization and game play. Now SSI has released **Wizard's Crown** which throws in a few new tricks of its own.

Actually, Wizard's Crown is mostly old wine in new bottles. As usual, you control a party of adventurers, each of whom may possess different attributes. You set off to find the long-coveted crown.

The main difference between Wizard's Crown and its competitors lies in its combat system and the wide range of abilities your characters may have in addition to the standard strength, charisma, etc. Abilities in hunting, tracking, first aid and swimming become essential.

Fans of SSI combat games such as Six Gun Shootout will enjoy the combat phase of the game. Every time an encounter with the local monsters occurs, you have the option to resolve it quickly or go into a full-blown combat, in which case the action shifts to a tactical combat mode where each character has a variety of options—from loading and aiming a bow to moving and dodging to casting spells. In tactical mode, a round of fighting can take from 10 to 40 minutes.

Wizard's Crown is okay. But I probably would have enjoyed it more if I felt that I was really controlling the characters—not just watching random-number generators at work.

FIGHT NIGHT

Accolade
20833 Stevens Creek Blvd.
Cupertino, CA 95014
(408) 446-5757
$29.95, 48K disk

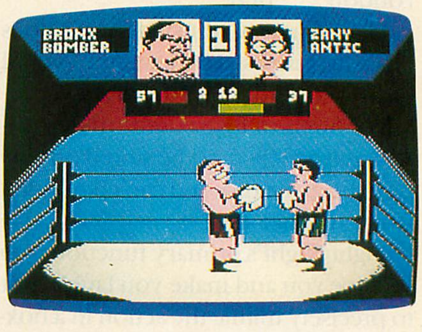
CIRCLE **254** ON READER SERVICE CARD

Reviewed by Gregg Pearlman

Fight Night is an arcade-style boxing simulation and "boxer construction set" that comes across as entertaining, frustrating and not just a bit silly (which is one of its strengths).

Accolade's press release accurately describes Fight Night as "whimsical." It's clearly not a serious boxing game. Some of the supplied boxers smoke cigars in the ring, sport derbies or caps, even wear glasses. Your joystick-controlled boxer becomes the new champion if he can plow through Dip Stick, Kid Kastro, Hu Him, British Bulldog and Bronx Bomber, the current champ.

An options menu in the title screen



gives you these choices: Main Event, in which your joystick-controlled boxer takes on four contenders and the champ (should you get that far) in three-round bouts; Boxing Construction, which allows you to "build" 24 boxers that can be either player-controlled or computer-controlled; Training your constructed boxer; Practicing what you learned in training; and Tournament play, which lets two players pit various boxers

continued on next page

against each other in a round robin.

Controlling your boxer with a joystick isn't easy. If your opponent lands a blow, you must wait one or two beats before trying one of eight moves—throwing or faking a jab or body blow, putting your guard up or down, or moving left or right. You'll know how you're doing by the scoreboard: each boxer has "point" and "resistance" values for each punch. Also, the "KO bar" shows how close a boxer is to being knocked out. The longer your boxer's bar, the sooner you'd better hope for the end of the round.

The cartoon-like graphics are fun to watch, and the manual tells all about the contenders on the game disk. For instance, Dip Stick, small but slow, specializes in kidney shots and low blows. British Bulldog, upon learning to walk erect, resigned as Dean of Oxford to pursue pugilism full time. And The Bronx Bomber won his championship by creaming Darth Vader. He has no weaknesses, everything is his strength, and suggested strategy is to "Phone Lloyd's of London. . . pray."

Fight Night is amusing, but it does have its quirks. For instance, you'll find yourself flipping the disk over often enough to lose count. Also, constructed boxers must be stored on side B of the game disk and can't be loaded from another disk.

Fight Night's primary function is to involve you and make you laugh, not to precisely mimic the action in a boxing ring. It de-brutalizes the sport, which is a point in its favor.

GETTYSBURG

Strategic Simulations Inc.
1046 N. Rengstorff Avenue
Mountain View, CA 94043
(415) 964-1353
$59.95, 48K disk

CIRCLE 252 ON READER SERVICE CARD

Reviewed by Rich Moore

SSI has an excellent simulation of a chaotic Civil War battle in **Gettysburg: The Turning Point**. The tide of victory turns frequently throughout the game, just as it did more than a century ago in Pennsylvania.

Whenever the battle seems to be under control, reinforcements pour in for the other side. Painstaking plans and maneuvers disintegrate into one melee after another. Neither the Union nor the Confederate commander enjoys a particular advantage. Though the North can ultimately field more men, the South could flank the larger Union army and shatter it before the masses of troops can arrive.

Gettysburg is a very tactical war game played on a 36×52 grid of 200-yard squares with three elevations of terrain. The players must manage their forces at the army, corps, division and brigade levels.

The players must also take care to mount and dismount cavalry, limber and unlimber artillery and choose a "facing" that effects each unit's field of view. Lines of sight and communication have significant effects on this simulation of the turning point of the Civil War.

Since the game only covers the three days of the battle at Gettysburg, supply lines are not considered to any great extent. But uncontrolled expenditure of ammunition could make a unit run out of bullets or shells at a critical time.

Gettysburg seems to be best played solo, unless you've got something entertaining to do during the other player's turn. Early in the game this process goes quickly, but by the beginning of Day Two, each player can easily spend an hour making a single move—which only covers one hour of game time. Yes, the three-day Battle of Gettysburg could easily take a week or more to complete on the computer.

Other options include various levels of difficulty, playing with or without a time limit, "hidden units" (Cavalry does nice reconnaissance work), and icons or "military" symbols for units. The manual *does* warn that the default level (3) is "a challenge".

The player can play any or all of the three days and change reinforcement and ammunition resupply rates. The basic game is good for learning the fundamentals of Gettysburg. But it doesn't constrain either side with dismounted cavalry, limbered artillery, "facing" lines of sight or poor command and control, all of which will make the game tough on an unwary or reckless commander.

The software spends a lot of time accessing the disk, although the two-drive option makes life *much* easier. Keyboard commands are straightforward, except for cursor control using the number keys. A "compass" on-screen helps, but moving right with the [3] and left with the [7] is awkward.

SSI has included a nice way of checking on each unit according to its position in the order of battle—*very* useful to ensure that all units are checked in each move and that command control can be maintained.

The manual is good overall, but it has rough spots and doesn't discuss all the differences between the basic game and the more challenging levels. The command summary pages and the order of battle are helpful, along with the nicely done map cards. There is a lot of "quick reference" information, most of which is essential to successful play. SSI has also included a well-written narrative of the Battle of Gettysburg which does an excellent job of setting the mood for the game.

I found Gettysburg enjoyable and educational. The Civil War isn't really one of my major interests, but this game easily held my attention. It left me appreciating the problems faced by both sides in this battle and feeling great respect for the men who fought there.

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Warrenville, IL 60555
(312) 393-2317
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CIRCLE **160** ON READER SERVICE CARD

RAMBO II

(entertainment software)
Mindscape Inc.
3444 Dundee Road
Northbrook, IL 60062
(312) 480-7667
$9.95, 48K disk

Each title in the new Thunder Mountain line from Mindscape costs $9.95—"the software industry's equivalent to the paperback book," according to company president Roger Buoy. The Thunder Mountain line kicks off with **Rambo: First Blood Part II**, an action graphics game.

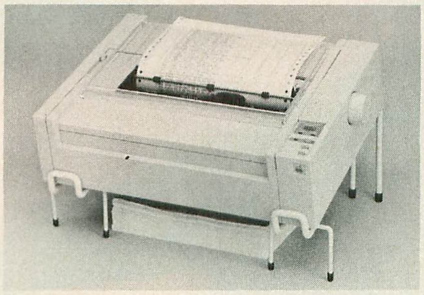
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HOLLYWOOD HIJINX

(entertainment software)
Infocom Inc.
125 CambridgePark Drive
Cambridge, MA 02140
(617) 492-6000
$34.95, 48K disk

Dead Uncle Buddy Burbank, the Hollywood mogul, and Aunt Hildegarde have left you their entire estate—with one stipulation. You get the lot *only* if you can find 10 treasures hidden throughout their lavish Malibu home. **Hollywood Hijinx** is a tribute to B-movies and is loaded with memorabilia from Uncle Buddy's films, which include *A Corpse Line* and *Vampire Penguins of the North*. The package includes a lucky palm tree swizzle-stick.

CIRCLE **164** ON READER SERVICE CARD



TAC5 JOYSTICK, PRINT N STACK

(peripherals)
Suncom Inc.
260 Holbrook Drive
Wheeling, IL 60090
(312) 459-8000

The **Tac5** ($16.99) joystick utilizes a sophisticated "MicroSwitch Array" technology, enhancing the Atari controller's level of responsiveness, user feedback and reliability. Suncom also offers three widths (12 to 18 inches) of **Print N Stac**, a paper tray and printer stand combination, at $18.99, $19.99 and $21.99. Paper is collected and folded neatly as it comes out of the printer.

CIRCLE **161** ON READER SERVICE CARD

MAIL ORDER MONSTERS

(entertainment software)
Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
(415) 571-7171
$14.95, 48K disk

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INSYST!, VERSION 3.0

(business software)
SoSoft
2513 #E Sylvester Road
Albany, GA 31705
(912) 888-0821
$79.95, requires 130XE

This upgrade of **InSyst!** version 2.23 uses the extra memory of the 130XE to increase to over 4,000 items the business inventory maintained. This is an increase of about 250% over the previous version (which is also included on the double-sided disk). InSyst! 3.0 supports four disk drives and runs faster than version 2.23, since no overlays are used. Version 2.0 was reviewed in the November, 1986 **Antic**.

CIRCLE **165** ON READER SERVICE CARD

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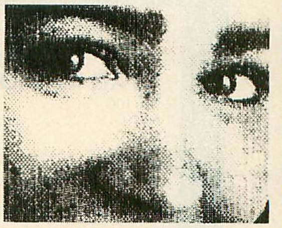
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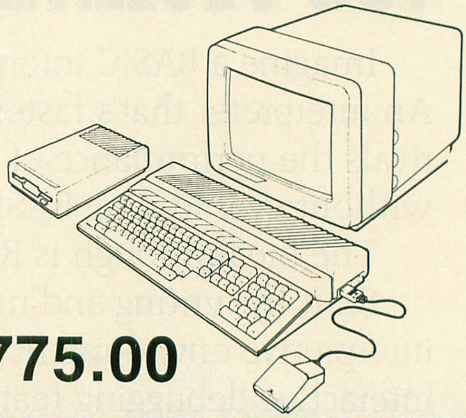
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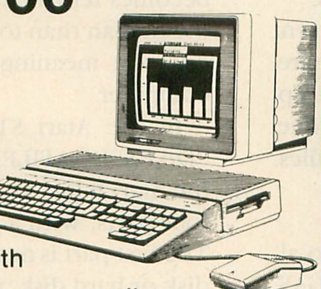
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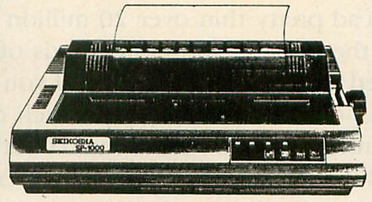


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PATHWAYS UNCOVERED

Proper file handling on your ST

By PATRICK BASS, Antic ST Program Editor

Atari 8-bit owners who use DOS 2.0/2.5 don't need 'em. SpartaDOS, and other "big-disk" DOS's, have 'em. The Atari ST series computer couldn't live without 'em. What are they? Pathways. What are pathways? How could they be so important if they aren't used in computers like the Atari 8-bits?

THIN ICE

The standard Atari 8-bit DOS 2.0/2.5 allows up to 64 files on a disk at one time. On a disk which stores roughly 88K this is a practical solution. But hook up a disk drive which allows greater storage, and you need to move up to a DOS which supports the extra room, like SpartaDOS. The Atari ST floppy disk drives may store up to 800K, and hard drives store 20,000K or more. A little math shows 64 files would get spread pretty thin over 20 million bytes.

In practice, the Atari ST allows hundreds of different files to be stored on the disk at one time. If you so desire, they may be all on the first directory which opens up. If there are more files than can show onscreen at one time, you may scroll the screen around to view the other files.

BIRDS OF A FEATHER

Eventually, you'll find that a number of files seem to always belong together. Picture files always go with DEGAS, text files always go with FirstWord, and so forth. It would be nice to be able to group these different files together. The basic Atari ST operating system, TOS, allows you to do just that. TOS lets you create a "folder," which is nothing more than a file which holds another disk directory. Storing a file inside a folder is just like storing it to a special small "disk-on-a-disk" TOS has set up for you. This folder, or series of folders, along with the disk drive specifier is known as the *path*.

This means we may create a folder called BASIC, and store all our BASIC programs, and ST BASIC itself, apart from picture or text files. When we open the BASIC folder by double-clicking on it, we only see BASIC and its programs, and no other files. We may also safely store two files which share the same name on the same disk, as long as they're in different folders.

Let's examine the filename structure for the Atari 8-bit, and then compare it to the pathway\filename structure for the Atari ST in detail.

PATHWAY TO HEAVEN

Take, for example, the Atari 8-bit file specification "D2:AFILE.BAS". It is made up of three parts. First, the "D2:" is the drive specifier. It describes which logical device the information will be transferred to or from. The next part, "AFILE", is the name of the file you typed in when the file was created. The last part, ".BAS" is the file extender. It should describe the type of file stored. Without it, mixing different types of files, like text and data, becomes remarkably easy. The extender means more to the human than to the Atari 8-bit, but the extender takes on great meaning in the world of the Atari ST series computer.

In the Atari ST, the same file could be stored as "D:\BASIC\AFILE.BAS". Compare it to the filename for the Atari 8-bit. The file specification is now broken into four parts, with a significant new character introduced. The first part is nearly the same. "D:" is typical of a RAM-disk or hard disk, with "A:" or B:" describing the floppy drives. The new part is the folder name, or pathway, "\BASIC", which describes which directory (folder) TOS should go to find the file "\AFILE." ST BASIC itself will only show (without coercion) files which have a ".BAS" extender.

The new character is the backslash, or "\". This is a special character to TOS, which reserves it for file handling functions like separating pathways and filenames.

DEEPER AND DEEPER

You may place folders inside folders, up to eight deep. This means we could have a legal file specification like "B:\GRAPHICS\DEGAS\LORES\PICTURE.PI1" which breaks down to having a low resolution DEGAS picture

called PICTURE.PI1 inside the LORES folder, which is inside the DEGAS folder, which itself is inside the GRAPHICS folder, which is on floppy disk drive B:. Whew. Programs published in The ST Resource up to now have had somewhat simplistic file handling abilities. For example, all our C programs up to *San Francisco Fogger* (ST Resource, Feb. 1987) have assumed the program ran from the first directory which opens up on the disk, and all the files they accessed were on the same directory. This, of course, can't last. At one point or another, you'll need to read or write a file from another directory, or another disk drive.

FELINIS MORTALIS

This month we'll explore how to instruct the Atari ST exactly where to go and find the file you want. We'll do this in a program which performs a somewhat curious function. Recently, our Antic ONLINE editor, Charlie Jackson, completely revamped our online magazine on CompuServe. (Type GO ANTIC next time you're online.) He had a problem. He needed a program which would take a text file and allow him to reformat the text to different line widths. For example, take a text file in 80 column format and change it to 35 column format. . .without breaking words in the middle. I wrote it, and since it's a good vehicle for demonstrating pathways, I present it to you this month. Those of you out there in magazine land who publish newsletters might find it interesting also. Want 12 column format? How about 37,254 columns? Be my guest.

In a nutshell, the program allows you to select the line width, from one to one million characters per line, read in a file from any logical source disk into an internal 100K buffer, reformat it to the desired line width, and then write the file to any logical destination disk.

TYPING IT IN

Those of you who get the Antic Disk may skip down to the next section, and for help in transferring the program LIMIT.PRG to your ST, see the Help file on side B of the Antic Monthly Disk. Otherwise, type in Listing 1, LIMIT.C, using your favorite word processor and save it to disk as an ASCII file. (This means making sure the WP mode in FirstWord isn't check-marked.) We'll create the finished program using the developers' Alcyon C, but most any C should be able to duplicate the functions. MegaMax C owners will need to **Malloc()** the 100K buffers. Create the proper batch file for your flavor of C, and boil your source code down to candy.

USING THE LIMITER

First, select a text file to reformat. To activate the program, double-click on LIMIT.PRG. Click through the Title box, and select the desired number of characters per line in the next Alert Box by clicking on the [<] or [>] buttons. When you're happy, click on [SELECT]. Next comes a file selector box, where you select the text file to reformat. When you click on [OK] the file is found, read in, and reformatted. Next, another file selector box is presented for you to enter the path\filename for the newly reformatted file to be written to. Enter the new path\name, and click on [OK]. The new file will be written to disk, and a new Alert Box will pop up, asking if you desire to reformat another file. Answer either [YES] or [NO], with [NO] exiting you from the program.

PROGRAM TAKE-APART

Examine Listing 1, LIMIT.C . Notice we have room for two 100K buffers. You may change this up or down as desired,

> ***TOS lets you create a "folder," which is nothing more than a file which holds another disk directory. Storing a file inside a folder is just like storing it to a special small "disk-on-a-disk" TOS has set up for you.***

to fit your amount of memory. The first function of any interest is **get_line_length()**, where we dynamically build and display an Alert Box which presents a user-changeable number. The number displayed is the number of characters per line in the finished text file.

Below, in **convert()**, the actual work of conversion is performed. When the function is entered, it is assumed the file to work on has been loaded into **text_buffer**[], and the size of the file is in **(long)bytes_read**. Starting at the beginning, and accounting for each character in the original file, first copy the current character into **temp_buffer**[]. If the character transferred was a carriage return, and the next character in line is a line feed, then reset the current count of characters in the newly formatted line, thus starting a new line.

Otherwise, advance the count of characters in the new line. Next, check if the current character count is greater than the maximum linelength requested. If it is, then keep copying characters from **text_buffer**[] into **temp_buffer**[] until the current word is finished, and then insert a new CR, LF combination. When the entire file has been processed, remember the new file length in **(long)bytes_read**.

FRESH MEAT

The next two functions are really why we visited here this month. The first is **read_the_file()**, and the other

continued on page 60

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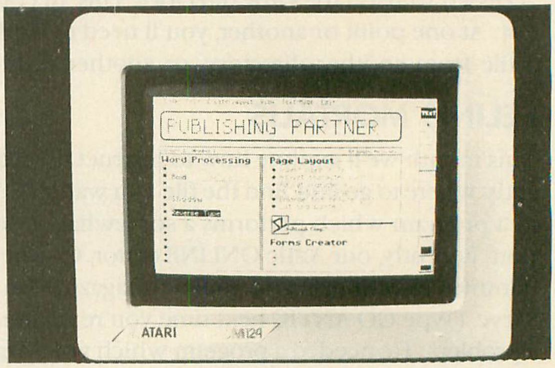
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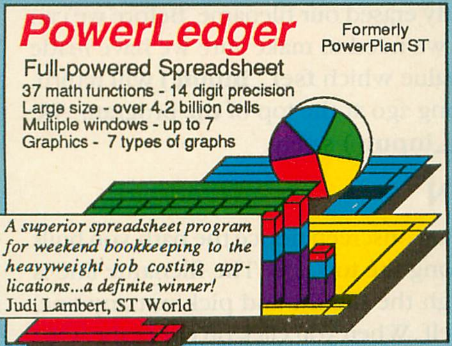
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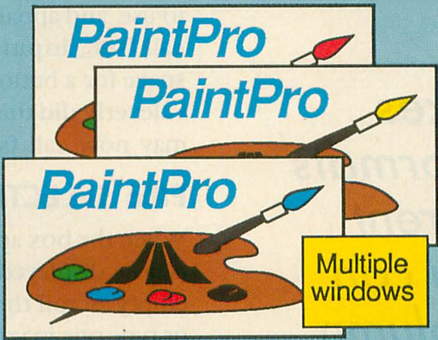
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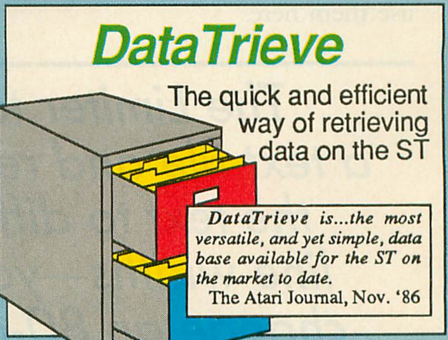
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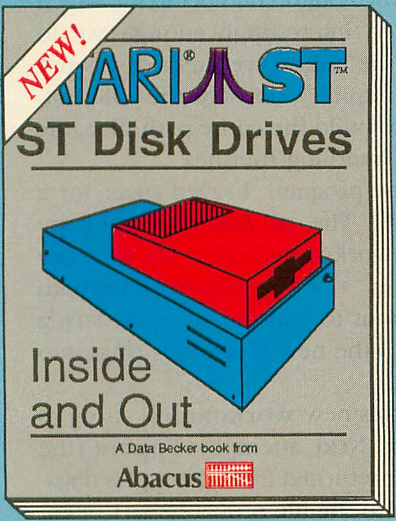


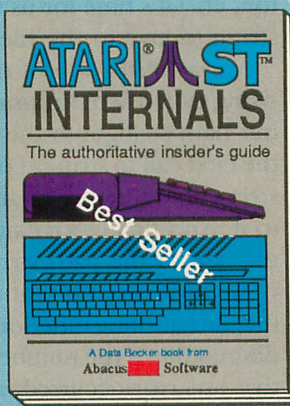
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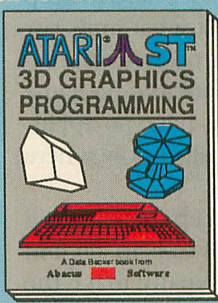


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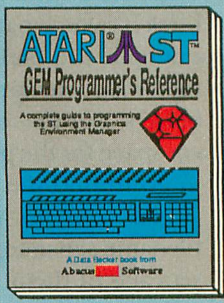
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continued from page 57

is **write_the_file( )**. These two functions will search out any file from any device. In them we also have bonus string-handling functions for copying strings hither and yon, breaking them apart, and sewing them back together. These functions, and the function **long2ascii( )** were provided by Tom Hudson, and I thank him for letting me use them here.

The Limiter takes a text file and reformats the text to different line widths—you can change an 80-column file into 35 columns—without breaking words in the middle. Want 12 columns? How about 37,254? Be my guest.

Before we get to the routines, let's discuss what GEM wants and when it wants it. When you first get your feet wet, squishily stomping through the GEM interface (and folks, there's a *lot* of squishy stuff in there) it's hard to keep track of which part of GEM wants what at what time. For example, the **fsel_input( )** call, which presents the familiar file selector box, wants separate path and filename buffers. But the read and write functions have no apparent space for the path. Do they automatically know where to go to find the current path?

In a word, *no*. Yes, it is important to keep the path and filename separate, since there are special calls to get and set each of them, but right before we actually make the call to read or write, we build a new string out of the filename tacked onto the end of the pathstring, and we present this new string to the file routines. They love it!

KEEP AN OPEN FILE

To open a file, get the last known accessed device number from **Dgetdrv( )**. This function returns a number typically in the range of zero to ten. Add this number to the value of the letter "A", and the result is the device letter. For example, if **drive** is 1, then the device is 1 + 65, or 66, which is ASCII for "B". The very first character in the path must be the device letter, so add the value of **drive** to "A", and place the result in position zero of the pathstring.

The second character must be a colon. Pick up the previously known path, starting with the second character, with the call **Dgetpath( )**, and place it into the new path we're building. In this example, we want to access any file on the disk, so we **strcat( )**, or string concatenate, the string "*.*" onto the end of our new path string. These are wildcards, just like in the Atari 8-bits. Next, we make sure the new filename is cleared out.

At this point we've created a new path string for TOS to use, and apparantly erased our filename. Before we can call **fsel_input( )**, we need to make sure we have made space for a button value which **fsel_input( )** will return. I cleverly did this long ago at the top of the program. We may now call **fsel_input( )** safely.

FILE SELECTION

When the box appears onscreen notice the path you built is now displayed along the top line. The filename line is empty. Scroll through the file list and pick out any one, or type one in yourself. When you click on either the [OK] or the [CANCEL] buttons the call is finished and control returns to your program. The exit button pressed is returned as a number, either one or two, in the variable **button**. Whatever you type into the path string or the filename string, while the file selector box is up, may be found in the path and filename buffers you supply the routine in the beginning.

We may check the returned button number to see which button was pressed. Which, interestingly enough, we do in the very next line. If the button we pressed was not the [CANCEL] button, (Hmmm . . . must be the [OK] button, eh?) it's time for us to build the entire path/filename string to give to the file handling routines.

Above, at the top of the program, I saved space for a string called **workname**[]. The call **strcpy( )** will copy our path string into the workname buffer. We then use the next call to strip off the " * . * " we placed on the path string above, as we're about to add our filename string to it. And finally, **strcat( )** the new filename string onto the end of the path string.

We now may present this new **workname**[] string to the file handling functions. Next, attempt to **Fopen( )** the desired file. If the number returned from this call is negative, an error occurred, and the file probably isn't open. But if the value returned is positive it's should be safe to access the file.

Which we do below, where we **Fread( )** up to **max_bytes** into **text_buffer**[]. In either case of good or bad access, we close the file to be sure, and perform a quick check to see if the buffer overflowed. This means you tried to read a file bigger than the buffer.

The routine to write a file is simply the inverse of the read. The string and file handling methods are identical.

WRAP-UP

I hope you enjoy these routines. They're short, and they cure a problem in inadequate file access. Use them as you see fit.

Listing on page 87

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CIRCLE **202** ON READER SERVICE CARD

Reviewed by David Plotkin

Michtron's **Pinball Factory** allows you to build an ST pinball game, test it, and play it without using up a truckload of quarters. Since I am notoriously bad at the real thing, this software enables me to play electronic pinball to my heart's content.

Pinball Factory is totally mouse-driven and is extremely easy to use. The first step is, of course, to build the game itself. Each pinball board consists of the field itself with bumpers, catchers, flippers, a background design on the left of the screen, and a decorative logo on the right. The field and logo are separately editable, and each has its own set of editing tools. Pinball Factory runs in low resolution (16 colors) only, making for a very colorful pinball game. To select among various options, you merely point to the option you want with the mouse pointer and click.

To edit the pinball field itself, you choose "Edit board" from the main screen which shows both the field and the logo. The logo portion is then replaced by the field editing tools. Two sets of 16 color blocks are available at the top of the screen. The first set is the primary drawing colors, which are those used for lines, circles, rectangles, rays, background fill, and the other drawing options you have. The second set of colors is used for the second color on two-color fill patterns. Selecting a primary or secondary color is just a matter of pointing and clicking on the color you want. Another color option has to do with whether the ball can "see" the color. Some of the primary colors can be made invisible to the ball, enabling you to use them for background designs which the ball will ignore. "Invisible" colors are indicated by a cross on the color box. Obviously, you need to be careful you don't make a bumper color invisible to the ball! You can even change any of the colors by use of three sliders for red, green and blue.

Besides the graphics tools mentioned above, there are a variety of brushes you can choose. You can also use the "Detail" option, which magnifies a portion of your picture for detailed work. The upper left corner continues to show that section of the picture at regular size, so you can tell what it will look like when finished.

Of course, you have available a wide range of different "bumpers" for the playing surface. There are several sizes of the round-type, rail bumpers (three next to each other, giving a bonus when all are knocked down) as well as many others. There are also catchers, which will hold any ball knocked into them. Upon putting three balls into catchers, all three will be released, making for some pretty hectic action. You can customize your bumpers and place them anywhere on the field. Placing a bumper over an identical bumper and clicking will remove the bumper from the playing field. You can also remove a bumper by using the [REMOVE] button. Clicking on [REMOVE] will highlight a bumper. Clicking on the up and down arrows will highlight other bumpers. When the one you want to remove is highlighted, all you have to do is click on the [!] button.

Editing the Logo window is just as simple. You have all the graphics tools mentioned (except bumpers), as well as several others. These include an airbrush, shadow option, and two sizes of text.

Pinball Factory gives you complete control over the rules of the game as well. You can set gravity, bumper elasticity, the number of balls for each player (up to 4 players) and what score will get you an extra ball. Of course, you can SAVE and LOAD a game, test a game (no score is kept, and you have an unlimited number of balls), or play for real. Playing involves using the up and down arrows to set the ball

continued on next page

launch spring, pressing the space bar to launch the ball, and using the mouse buttons or appropriate keys to activate the flippers. You can even move the mouse left and right to "bump" the machine, but be careful you don't TILT!

Comparisons of Pinball Factory with Electronic Art's "Pinball Construction Set" are inevitable. The graphics for Pinball Factory are better than those of Pinball Construction Set (PCS), and the program is very easy to use. Strangely, though, PCS has more features than Pinball Factory. It allows you to wire different bumpers together to get some special effects, such as extra bonus points. This is missing from Pinball Factory. Further, PCS has the option to design up to 10 of your own sounds. Pinball Factory is missing this as well. PCS also allows you to place the flippers anywhere you want on the field, and to use multiple flippers. Pinball Factory allows only one set of flippers, and they are preplaced on the board—you can't change them. Finally, PCS' files are stand-alone—you can give a pinball game you have built to a friend and they can play it without owning PCS. The files generated by Pinball Factory can only be played by someone who owns a copy of the program.



Pinball Factory comes with a thirteen-page manual, which gets the information required for you to use the program across quite nicely. The program is somewhat limited, but still fun to use and play. If you are "into" pinball like I am, then you will enjoy Pinball Factory.

SILENT SERVICE

MicroProse Software
120 Lakefront Drive
Hunt Valley, MD 21030
(301) 667-1151 $50

CIRCLE **281** ON READER SERVICE CARD

Reviewed by Rick Teverbaugh

Just like Hollywood's best submarine adventures, **Silent Service** takes you to the perilous Pacific Ocean during World War II. Submarines were always a lone-wolf-type of fighting force. You're out there alone, trying to do as much damage as you can for as long as you can. Only a loss of battery power, a limited supply of oxygen or—should I say it—destruction ends the patrol.

In the tradition of such classic films as "Run Silent, Run Deep" and "Das Boot," Silent Service gives a true feel for those capsule-like vessels that played such an important part in the Allied victory over the Japanese.

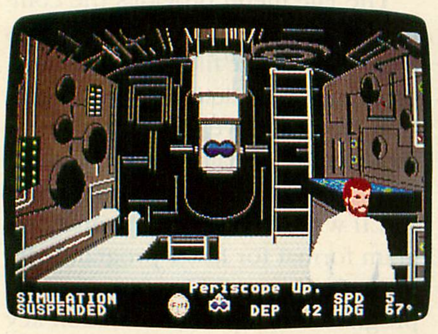
You'll feel the weight of your responsibility, especially in the five war patrol scenarios, each of which covers a different area of the Pacific and presents a different set of challenges based upon an historic sub's activity. Your job is simply to do battle with Japanese ships. How you go about it is up to you.

And Silent Service gives several ways to work up to the ultimate challenge. The novice commander should start with the torpedo/gun practice. The targets are stationary—line them up and fire away. At this level the game appears almost too easy, but it really isn't.

The seven convoy action scenarios aren't as involved as war patrols, but they do offer the same range of challenges, only with a pre-

determined goal. For example, the first scenario occurs on January 18, 1942, when the USS Plunger sighted an escorted cargo ship off southern Japan. This is your first chance to use your torpedoes against a moving ship.

Each scenario is both realistic and difficult, but there are more ways to adjust the difficulty of the simulation.



Choices include repairs to the ship (limited to port), limited visibility, convoys that change course at regular intervals, dud torpedoes, expert destroyers, convoy search, and manual angle-on-bow input for torpedo firing.

If you hold your own against the Japanese with all these reality levels switched on, perhaps the Navy could use your services. Once you've made those choices, the program selects an overall difficulty rating from 1 to 9, and this affects your ranking in the Submariner's Hall of Fame at game's end.

Silent Service provides a you-are-there feeling in so many ways, but the most striking feature is its sound. Some of the things you'll hear while playing include:

Ping!: an enemy destroyer has located your ship on his sonar.

Splash!: sonar reports that the enemy is dropping depth charges.

Whistling explosion: you've been hit by a detroyer's shell.

Metallic grinding sound: either your sub's scraping the bottom or you've been rammed by another ship. Hope for the former.

. . .and motor sounds: your ship moving (or a torpedo motor if you've just launched an attack).

Graphics certainly are a strong point of the product and lend a realistic feel to every battle. The first of the five battle station screens is the conning tower, from which the other screens are accessed. Any screen can be selected by mouse or keyboard and give you access to the maps, bridge, periscope/binoculars, gauges, damage reports and ship's log. As a novice, spend as much time as possible with the gauges. Learn which ones give the most critical information (battery level, fuel and depth).

Damage to your ship will hamper your efforts in a most realistic manner. A fuel leak will double consumption; damage to the dive plane will cut the rate the sub can dive or surface, and engine damage limits your top speed.

Another enjoyable feature is the time scaling. On patrol, a minute of real time takes about 15 seconds. But you can manually speed up the program to the point where an hour of real time takes about two minutes. This keeps the game from becoming tedious while looking for the enemy. But it's easy to scale the time back down when the enemy is sighted and you need the extra time to make battle station decisions.

Another jewel in the package is the 48-page manual, which does a lot more than tell you what buttons to push. Features include a line drawing of a typical submarine interior, a detailed explanation of torpedo-firing terminology, a map of the Pacific Ocean battle area, information about the historical perspective of the simulation, and tactical situation plots and playing tips.

One of the best tips involves how to attack depending on the time of day of the encounter. Surface attacks are possible at night, but submerged attacks are necessary during daylight hours. Either is effective at dawn or dusk.

Great care has been taken to make Silent Service as real as possible—without making it too difficult for the beginner or too simple for the experienced gamer. It's a traditional MicroProse product and it's nice to see that they've remained dedicated to detail.

BLACK CAULDRON

Sierra On-Line, Inc.
P.O. Box 485
Coarsegold, CA 93614
(209) 683-6858
$39.95

CIRCLE **202** ON READER SERVICE CARD

Reviewed by Matthew Loveless

The Black Cauldron is a graphic adventure game based on the Disney film of the same name. It consists of about 70 full-color screens drawn in a 3-D perspective, each frame depicting a different location in the mythical land of Prydain.

Although the pictures are in a chunky low-resolution mode, obviously ported from another make of computer, the images are slickly drawn with accurate perspective and subtle shading, producing a nice "cartoonish" feel. Some frames are still-lifes, others are populated with characters you may interact with, and



at least six screens play arcade-type games. You may have to negotiate a swamp by leaping across unstable rocks, or climb a castle wall while soldiers drop rocks from overhead.

Taran, a lifelike animated character,

continued on next page

must destroy the infamous cauldron before the infernal horned king can evoke its latent evil and enslave the world. With the mouse, joystick, or keyboard, you move Taran around in simulated 3-D scenes where he can pass in front of and behind screen objects—much like Player/Missile graphics on the 8-bit machines, except that here the objects actually seem to exist in space. You can bump into trees (watch those low branches) and walk between rocks. This effect will be familiar to those who have played King's Quest or other Sierra On-Line games that use similar movement routines.

Unfortunately, the movement algorithm has some annoying problems. For example, you must align yourself at a painstakingly exact angle before you can walk through some doorways. And then there's that occasional tree you can't seem to walk around.

When you reach the edge of one screen, the adjacent screen is loaded in slowly. This becomes frustrating when you accidentally leave a screen and must wait for the next one to load before you can return. This happens frequently because often you must operate close to the screen's edge. One careless flick of the mouse and you'd better be prepared to wait.

Although not mentioned in the documentation, the game speed may be adjusted by typing "slow," "fast," or "normal" and pressing [RETURN]. Also, for those of you who enjoy secret messages and programmer's arcana—try pressing [CONTROL] [P] or [CONTROL] [4]. I recommend frequent saves. However, the save disk is not in GEM format and can't be used for anything but Black Cauldron files.

The Black Cauldron's main problem is typical of early software for newer computers. It doesn't fully utilize the ST's capabilities. For those who bought their ST because of its power, this is a serious drawback. If I wanted IBM PC games, I'd have bought a PC.

There is nothing really extraordinary about the Black Cauldron, but there is nothing really bad about it either. Sierra has again done well in the now over-familiar genre of graphics adventure games. If you like Sierra On-Line's other adventures, you should enjoy this game.

TEXTPRO

Abacus Software
P.O. Box 7219
Grand Rapids, MI 49510
(616) 241-5510
$49.95
CIRCLE **282** ON READER SERVICE CARD

Reviewed by John Kintz

Atari ST users familiar with 1ST Word already know how the GEM interface makes word processing easier. Those still pounding away with ST Writer or another non-GEM program should sit up and pay attention. TextPro is loaded with features, not the least of which is full GEM implementation.

TextPro is a line-oriented word processor. This means that data files are handled as single lines instead of a continuous stream of text, providing several advantages to the user, including the ability to go directly to a particular line of text in a document via the GOTO command. Other major features include full printer control, a large text buffer, high-speed input capability and cursor movement, and the unusual ability to print vertical (sideways) text.

TextPro is easy to use primarily because of several commands which can be accessed from pull-down menus. And nearly all of the commands have keyboard equivalents. Like most ST word processing programs, TextPro stores files as ASCII characters, making it compatible with several "writer's helper" programs, including Regent Spell and Thunder!

TextPro is copy-protected and must be loaded from the master disk. Abacus offers a back-up disk for $10 if purchased when you register your program. Upon loading it, you are asked to specify how many columns to display on screen (from 10 to 180). The program is now ready to accept text.

The File menu provides the commands to load, save or delete files from disk, delete files from memory, or change your active drive designation. You can save files in document mode (with formatting commands intact), non-document mode (pure ASCII write-to-disk) or C source program format for faster program editing in C. Also available are options for programming up to 30 function key combinations for macro files, simple output to screen (for print preview) or printer and a quit-to-desktop selection.

The Edit has commands for hyphenating, index marking, contents marking, place holding, inserting blank lines or page breaks, and a command which lets you go directly to any line in your text. Search and replace functions are provided, as are block mark, copy, erase and move commands. An alphabetical sort command is also provided for index creation.

Many powerful features are available through the Style commands, assuming, of course, that your printer can support them. The complete range of GEM-type style commands can be embedded into your text, including boldface, italics, light, underlined, outlined and super/subscripts. You can select from 10, 12 or 15 characters per inch. Also included are 10 special printer commands which can be written into the printer driver easily and called directly from the Style menu. This provides excellent printer flexibility. There are also embedded commands that will insert the system time and/or date into your text automatically.

A full menu of formatting commands includes right and left hanging indents, right, left or full justification, and centering. Insert/overwrite, word wrap on/off, and auto-hyphenation on/off toggles are available. The last option in this menu is the format selection—somewhat of a global format menu in its own right. Here you can specify paper length, line spacing, margins, headers, footers, and up to five columns of print on a single page.

One unique feature of TextPro is the associated Output program provided along with several other utility programs and printer driver files. The Output program lets you re-route the printer output to a disk file or a special file for use with Text Designer, a page layout package from Abacus.

This program also allows chain-printing of multiple files as well as utility routines for mail merge and generating a table of contents or an index specific to your document. The most important feature, however, gives you a choice of either horizontal printing on various printers or vertical printing of your document on any Epson or Epson-compatible printer. This works well for those special applications where you really need more than 80 columns of full size type across the page.

Finally, the manual clearly explains each available function, with illustrations and examples throughout. A customer support number is also provided.

TextPro seems to be well thought out, easy, flexible and fast. The program makes excellent use of the GEM interface and provides lots of small enhancements to make your work go more easily. I did encounter a bug while attempting to use the indent commands, but this can be avoided easily. The publisher is aware of the problem and expects it to be eliminated in future versions.

Whether you're a professional writer or just a casual "hunt and peck" typist, if you have an ST and haven't yet moved up to a GEM word processor, pick up this one and become a text pro.

UNIVERSE II

Omnitrend Software
P.O. Box 3
West Simsbury, CT 06092
(203) 658-6917
$69.95

CIRCLE **204** ON READER SERVICE CARD

Reviewed by Mark Falleroni and Georgi Zamora

Those who appreciate strategy games but are indifferent to graphics might well enjoy **Universe II**. If you like long-term projects and have plenty of time and patience, Universe II is worth the money, but you'll have to work for your excitement.

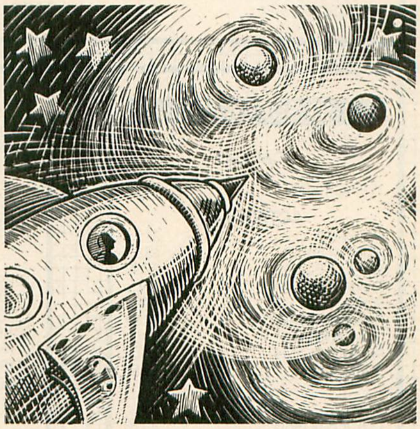
The manual doesn't say much about your current mission, nor does it tell you what are the criteria for winning the game. That is left for you to discover as a starship captain.

Universe II appeals to me because I appreciate the feeling of being self-directed and in control. I was able to choose not only the type of ship to command, but also my own crew members. Every detail was left up to me, including the brand of equipment I picked to outfit my ship. I could make choices and create an identity, just as in the real world.

Although the basic plot is familiar, the game's outcome is unpredictable because there are so many variables. Having all those different options gave me the feeling of creating my own story.

The game starts with your 24th-century spacecraft in a cluster of 47 planets called the Local Group (LG). The LG hasn't heard from the Home Cluster for 40 years and has nearly destroyed itself. Currently the LG is divided into two hostile governments.

You have been retired from the Federated World Special Forces (FWSF—the good guys) for eight years. The FWSF is an intelligence agency that gathers information and performs covert operations within the United Democratic Planets (the bad guys). Your cover is as a free trader from the planet Vromus Prime, and you can mine for ore or shuttle passengers between planets. But you still occasion-



Cris Mortensen

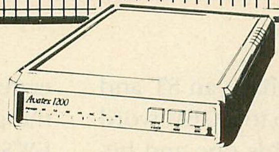
ally receive secret assignments and funding from the FWSF, and because the FWSF recognizes that the life of a secret agent can be mundane, they will allow you to become a space pirate. But you can only steal from ships within the United Planets.

The starport section is a text adventure without graphics. Unfortunately, the parser here is somewhat irritating about demanding exact wording. For example, you can say "Place the ticket in the slot," but not "Put the ticket in the slot." Since the program performs minimal word checking, you have to remember to follow the user's manual closely, or else the game crashes.

Also inconvenient is the fact that the game is played on three disks. Disk A handles most operations, but you need disk B to launch a shuttle and disk C to enter a starport. Since these happen often, you can't avoid constant disk switching—unless you have two disk drives or a hard disk.

Overall, I did enjoy Universe II, but I would recommend this game primarily for ST owners who enjoy solving vast, intricate puzzles.

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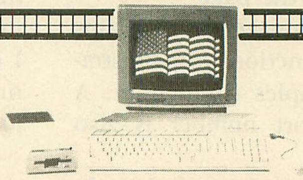
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By GREGG PEARLMAN, ANTIC JUNIOR EDITOR

THREE FROM MICHTRON

Bone up on your knowledge of the Isles of Langerhans, frog-eating contests and toe exhibitions in the fast-paced, none-too-easy **Trivia Challenge**. Nearly 4,000 questions range from international sports to the arts to pop music science to general knowledge.

Backup! copies your hard disk files to floppies and back again, minimizing the risk of loss. The fast, specialized routines help the program orchestrate the entire backup procedure for you, so there's no reason not to make backups.

Enjoy hours of creative pleasure with the **Pinball Factory** as you design, build and edit your own screens. Choose from several bumpers, tabs and other devices, and place them anywhere you like, to get the action just right. Commands include Draw, Line, Ray, Frame, Box, Circle, Detail (to magnify small areas), Airbrush and Shadow. Change any of the ST's 16 palette colors—even change the rules: alter gravity, bounce, scoring, bumper strength and tab bonuses.

$39.95 each. MichTron Inc., 576 S. Telegraph, Pontiac, MI 48053. (313) 334-5700. PRESS.
CIRCLE 231 ON READER SERVICE CARD

HISOFT BASIC COMPILER, DEVPAC ST AND SAVED!

The ST BASIC-compatible **HiSoft BASIC Compiler** (about $20 in English pounds) has a GEM-driven editor and executes compiled programs up to 30 times faster than when they're interpreted. Programs can be as big as your computer will allow, and you can call assembly language and C functions. Complete graphics support includes multiple windows, and strings can be 16Mb long.

DevpacST ($79.95) combines a full 68000 macroassembler that can assemble source code at 30,000 lines per minute, a full screen editor with a comprehensive range of search-and-replace commands, a powerful disassembler and debugger that uses its own screen memory and drivers so you can debug graphics programs easily, and a fast linker.

Saved! ($49) is mainly a desk accessory that lets you delete, rename and copy files, get information on a file or disk, or copy or format disks and print text files. You can set the path used to find executable programs, and Saved! can look for other drives and other directories.

HiSoft, The Old School, Greenfield, Bedford MK45 5DE, England. +44 525 718181. PRESS.
CIRCLE 296 ON READER SERVICE CARD

ACCOUNTS, INVOICING, INVENTORY CONTROL

Execon's **Accounts** is a fully-integrated modular business system (about $250 in English pounds) consisting of Set-up, Accounts Receivable and Payable, General Ledger, Trial Balance and Forecasting. The menu-driven **Invoicing/Order Processing** system ($150) can stand alone or integrate fully with other modules and allows automatic transfer of data between modules. With the **Inventory Control System** ($150) you can use the two-bin system, wherein as soon as one bin is empty, supplies are taken from the second bin and an order is placed; the periodic review method, in which stock levels are reviewed at set periods or dates, allowing for all orders from one supplier to be made together; or the re-order level method, where a minimum stock level is set and stock is re-ordered as soon as that level is reached.

Maximum file size for all Execon programs is 32,000 units, and you can configure your hardware to your own requirements.

Execon Limited, 143-145 Uxbridge Road, Ealing, London W13 9AV, England. 01-567 6288. PRESS.
CIRCLE 293 ON READER SERVICE CARD

ZOOMRACKS STARTER KITS

Quickview has released home and business starter kits with over 35 Zoomracks templates each for home and business. The **Business Starter Kit**'s templates include invoicing, prospecting, calendar, names and addresses, checkbook and phone logs. The **Home Starter Kit** includes names and addresses, phone logs, gift lists and recipes.

$19.95 each. Quickview Systems, 146 Main Street, Suite 404, Los Altos, CA 94022. (415) 965-0327. PRESS.
CIRCLE 232 ON READER SERVICE CARD

JOYSTICK/MOUSE

Plug your joystick into the box, plug the box into the computer, and *abracadabra*, your joystick is a mouse. This interface sends the appropriate pulses to the computer when you move the stick, moving the cursor as the mouse would. And you can adjust the speed of the cursor response. The trigger button on the joystick becomes the left button on the mouse, but where's the right button? On the box. Try this on a flight simulator, where you might rather use a joystick than a mouse.

$29.95. State of the Arts Electronics (SOTAE), 6150 Jessup Road, Cincinnati, OH 45247. (513) 385-3312. PRESS.
CIRCLE 240 ON READER SERVICE CARD

QUIZAM

You are the commander of a U.S. space shuttle flight, and your mission, should you decide to accept it, is to dispose of eight useless satellites. Malfunctions and automatic defense systems hinder your progress, and the satellites beam strange, obscure—even trivial—questions at you. Answer these to capture the satellites in this newfangled trivia game, or provide your own questions and categories.

$54.95. Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. (415) 571-7171. PRESS.
CIRCLE 290 ON READER SERVICE CARD

DOLLARS AND SENSE

Monogram's best-selling personal finance package, **Dollars and Sense**, sets up five different types of record-keeping: assets, liabilities, expenses, income and checking. Recently ported over to the ST, the system supports unlimited transactions in each category. It can also produce a wide variety of reports and graphs for screen or printer. The non-copy-protected program supports hard disk drives and provides two levels of online help screens.

$99.95. Monogram, 8295 S. La Cienega Blvd., Inglewood, CA 90301. (213) 215-0355. PRESS.
CIRCLE 291 ON READER SERVICE CARD

continued on page 70

TYPESETTER ELITE

A high-resolution page designer

Reviewed by DAVID PLOTKIN

TypeSetter Elite is a product enabling you to design and print high resolution pages. These pages can include a wide variety of text in multiple sizes, simple graphic shapes drawn within TypeSetter, and more complex graphics imported from other programs. There are a few minor bugs you will need to look out for, and some of the options could be easier to use, although overall the program operates smoothly and is GEM-driven. TypeSetter Elite is not billed as a "desktop publishing" program, although, to a limited extent, it does a nice job of laying out single pages. The quality of the printed output is very good, and the program works with Epson/compatibles, Prowriter, and Gemini 10x printers.

WHAT IT DOES

Typesetter Elite offers many options, the bulk of them available in the drop-down menus. The program is arranged into four screens which make up the final "page." There is enough overlap between the four screens so you can see where you are as you switch from screen to screen. Part of the versatility of TypeSetter Elite is the ability to import from many other programs. You can import screens (to any of the four screens) from DEGAS or NEOchrome, import quarter-screen TypeSetter icons from XLENT's Rubberstamp or PM Interface, and load different fonts (TypeSetter comes with quite a few, and you can use fonts created by DEGAS and PM Interface). You can even choose whether to import a page, screen or icon and replace what is on the screen already or just merge the screen and the new file.Text from word processors can also be imported, by a two-step process. First you must import the text into an included utility called "TSE80.PRG." From there, you save the text as a TypeSetter screen, which can then be loaded into TypeSetter Elite. You may also SAVE screens, icons, and the whole page for use in other programs or to print out. Finally, you have the ability to load and save borders, although I didn't try this out as none are provided on the disk.

TypeSetter Elite has some simple graphics tools for drawing lines and shapes to offset different blocks of text on your page. These include a pencil draw mode, Drawto (line) mode, K-line mode (draws only horizontal or vertical lines), rectangle and ellipsoid modes. These last two will be filled depending on the options chosen for "Fill." You are equipped with an eraser, and also the ability to fill any closed shape. The eraser is of limited use, because it is very small. You can erase large blocks by using a rectangle filled with white, then erasing the outline of the rectangle.

You also have other options which can be used with the tools. You can set the pen size, which regulates how big a point or line you will draw with, set the fill index, style and color, and set the write mode. The write mode determines whether your drawing will replace what is underneath, be in the reverse color where it is on top of something (XOR) or just merge with it (overlay). The fill options allow access to a variety of fill patterns, whether to use no fill, a solid fill or the chosen pattern, and what color to use.

TypeSetter Elite allows for cut-and-paste as well. You may grab a rectangular section of the screen using the mouse, and either replace it somewhere else (leaving a blank space behind), or copy it somewhere else,

leaving the original as it was. In either case, you have the option of overlaying the new copy on the screen or replacing what was in the new position before. These options are rather limited by the fact that the "grab" rectangle is small and cannot usually pick up everything you'd like. For example, it is not big enough to grab a whole quarter-screen icon at one time. Another option allows you can pick up a whole screen at once, as well.

The text options of Typesetter Elite are the best feature of the program. There are two ways to put text on the screen. The first is to load a custom font into memory. As mentioned above, fonts from a variety of sources will work. These can even be NLQ fonts, which are of higher resolution and more carefully detailed.

Once you've loaded the custom font, you may choose from 10 widths and 10 heights, giving access to 100 different font sizes. You can, of course, load a different custom font at any time, so you can mix fonts on the page. You can also select the font color. The second text option is to use the built-in system fonts. You may select from 23 different sizes of font, from absolutely tiny to huge. You can also have bold, light, italics, underline and outline, or combinations. (Of course, some combinations don't work very well.) You can specify whether text laid on the screen replaces what is behind it or overlays it. The arrow keys, [RETURN] key, [BACKSPACE] and [DELETE] all work to edit your text. If you are using the system fonts, you can select the alternate fonts that are built into your ST, including Greek, Hebrew and European.

Since you have four screens to work with, there has to be a mechanism for moving between the screens. The arrow keys only move around the currently visible screen. To switch screens, or move the currently visible screen up, down, left or right, you use the Shift menu. This can sometimes be awkward, and I wish you could scroll the visible screen using the arrow keys.

The proof of all this is the final printed output. You can choose the printer type and number of copies (useful for when laser printers are common). You can also look at a print preview, which shows a representation of your page on the screen. In addition to printing out the entire page (all four screens), you can choose to dump just the visible screen, or portions of the screen for 3×5 cards, 4×6 cards, mailing labels, "Rolodex-size" cards, or a free form (any size) box. If you choose one of the fixed sizes, you will be allowed to position a rectangle to show the portion to be printed. If you choose free-form, then you can move the top, bottom, left and right sides of the rectangle independently to select the print area.

In addition to the mouse-menu controls, there are some function key shortcuts for use as you get more familiar with the program. Such options as selecting the system font or custom font can be more efficiently chosen this way. There are also a very few controls which are only available from the function keys, such as setting the right and left margins.

THE DOCUMENTATION

My biggest complaint about XLENT Software's products has always been their documentation. I have often found it confusing to use their products. The documentation which accompanies TypeSetter Elite is a tremendous improvement. The 35-page booklet is clearly written, and addresses every complaint I've ever had. It is divided into logical sections, includes a multitude of diagrams showing what the screen menus and dialog boxes look like, shows samples of all the system fonts (including the alternate fonts, and what keys to press to get aparticular character), and even has an appendix which details all the files on the disk and what they are for. I am thoroughly impressed by the documentation, and hope all XLENT's future products come with a manual this good.

THE DOWNSIDE

There are some minor bugs in TypeSetter Elite and some functions which could work smoother. First, the bugs:

1.) When you pull down a menu and click on an item, it leaves a mark behind on the screen. You will have to go back and erase all the stray marks when you are done.

2.) Drawing a filled shape over the text cursor or backspacing the cursor while in overlay mode leaves a "hole" which is very hard to repair if it is in a pattern fill. The solution is obviously not to have the cursor where it can be drawn over, and to put text in first, then fill in overlay mode.

3.) If you change the size of the system font, any error messages will be almost impossible to read, since they will be written out in the newly-chosen size instead of switching back to normal size first.

Since you must shift between screens, I was never successful in drawing a line all the way across the screen which lined up perfectly. This is a bigger problem than you might think, since you will often want to set off headlines from the text by using a line. Also, I really miss not being able to import Printmaster icons directly onto the TypeSetter page. You can get at Printmaster icons by using XLENT's PM Interface to translate PM icons into TypeSetter icons, but then the tiny PM icons take up a quarter page and 8000 bytes, most of which is empty space. Not only would it take days to move the PM icon disks into TypeSetter format, but it would take quite a stack of disks as well.

CONCLUSION

These small complaints aside, TypeSetter Elite from the prolific team of Dennis Young and Len Dorfman is a useful and easy-to-use program. The combination of GEM interface, excellent documentation, graphics, text and printer support at a very reasonable price are sure to make this one a winner.

TYPESETTER ELITE
XLEnt Software
P.O. Box 5228
Springfield, VA 22150
(713)644-8881
Atari 520ST/1040ST
$49.95
CIRCLE 203 ON READER SERVICE CARD

ST New Products

ST NEW PRODUCTS
continued from page 67

SPACE QUEST

In this science fiction parody (with 3-D graphics), you control the main character, Roger Wilco, as he works his way from sanitation engineer to space-age swashbuckler and lone space hero. Direct Roger through more than 60 animated scenes of spaceship interiors, alien landscapes and deep space.

$49.95. Sierra On-Line Inc., P.O. Box 485, Coarsegold, CA 93614. (209) 683-6858. PRESS.
CIRCLE **297** ON READER SERVICE CARD

LASERTYPE

Softlab's **LaserType** takes full advantage of the Hewlett Packard LaserJet+ printer and gives smooth graphics and full typesetting capabilities. Select from 20 different screens and tones for column headings, backgrounds or graphic designing, and control 16 type styles and sizes.

$279. Softlab, P.O. Box 879, St. George, UT 84770. (801) 628-5400. PRESS.
CIRCLE **234** ON READER SERVICE CARD

FORE*STAR AND PAYDAY

Fore*Star integrates General Ledger, the Financial Modeler spreadsheet, a word processor and Portfolio, a financial report print sequencer, all for less than $100. General Ledger account balances and historical balances are directly available for use within spreadsheets, and the General Ledger module features up to 32 independent journals and 512 accounts. The word processor has insert/delete, cut & paste and search-and-replace features. The Portfolio module links desired spreadsheet templates and word processor text documents in virtually any order.

PayDay ($69.95), is designed for small to medium-sized businesses, handling an annual payroll of $21 million for up to 255 employees. A built-in user configuration utility lets PayDay adapt to almost any payroll situation in any state. Two time card entry modes and context-sensitive online help are available.

Crystal Software. P.O. Box 803, Merlin, OR 97532. (503) 479-9516. PRESS.
CIRCLE **295** ON READER SERVICE CARD

QMS PRINTERS

Keep It Smart and Simple with the QMS **KISS** ($1,995), which produces crisp, near-typeset characters at nearly 400 characters per second (cps)—six pages a minute. Mix 64 fonts on a single page, and combine graphics with portrait and landscape text on the same page.

The **Big KISS** and **Big KISS** II (both $2,995) are quiet and fast, also allowing 64 different fonts on a page, with 17 built in. The Big KISS has a standard parallel interface, and the Big KISS II has a dual serial/parallel interface. Print eight pages per minute, and 256K can be used to print graphics with single, double, triple and quadruple Epson densities.

The QMS **Smartwriter 80+** gives you 19 resident fonts, 75, 150 or 300 dots per inch (dpi), and 2.5Mb of dynamic RAM, allowing you to produce a full legal page of bit-mapped graphics. Also, you can use most software packages that work with your dot-matrix or daisywheel printers.

QMS, P.O. Box 81250, Mobile, AL 36689. (205) 633-4300. PRESS.
CIRCLE **235** ON READER SERVICE CARD

DRAFIX 1

This inexpensive, full-featured CAD program features automatic dimensioning, snap modes, layering, and transform/copy commands. **Drafix 1** offers a second-generation user interface that has all menus visible all the time—you don't need to memorize menu hierarchies.

$149.95. Foresight Resources Corp., 932 Massachusetts, Lawrence, KS 66044. (913) 841-1121. PRESS.
CIRCLE **292** ON READER SERVICE CARD

DESIGNER COVERS

They're water-repellant but they let your ST "breathe." Choose from 12 colors and three types of material. These machine-washable covers protect your equipment from dust, liquid or other foreign matter that could disable it. Ventilation allows condensation to evaporate from heated parts. Prices range from $9.99 to $100.

Designer Products Inc., 6585 S. Yale, Suite 1050, Tulsa, OK 74136. (800) 223-2687. PRESS.
CIRCLE **230** ON READER SERVICE CARD

continued on page 91

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ACCESSORIES

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Disk File, with Lock (holds 100!) 5¼ 13
Power Strip, 6 outlet, (15 amp Surge) 15
Deluxe Power Strip w/Spike & Surge 24
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WICO Bat Handle Stick 17
Competition Pro 5000X Stick 18
6' Atari Serial I/O Cable 7
Book of Adventure Games I or II 15
Disk Notcher 5
Compuserve Starter Kit 24
U.S. DOUBLER (Dbl. Density for 1050) 49
U.S. DOUBLER without Sparta DOS 29
"Duplicator" for 1050 Disk Drive 125

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Loderunner 23
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DATASOFT

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Many Other Titles ... **CALL** ... 12

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O.S.S.

Action 46
Basic XL 36
MAC/65 46
Tool Kits for above ..... ea 19
Basic XE 46

SSI

Mech Brigade 38
War Game Const. Set 19
NAM 26
USAAF 38
OTHERS ..... CALL

SUBLOGIC

Flight Simulator II 37
Scenery Disks 1-6 ..... ea 15
All 6 Scenery Disks 74

SYNAPSE

SYN CALC 31
SYN CALC TEMPLATES 13
SYN FILE + ... 31

XLENT

Typesetter 22
Rubber Stamp 20
Page Designer 20
Megafont II 16
P.S. Interface 19
Word Processor 20

ST SOFTWARE

ATARI

1st Word 32
DB Master One 33
Joust 19
Star Raiders 19

ABACUS

Text Pro 33
Paint Pro 33
Datatrieve 33
Power Plan 52
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Leader Board 26
Tournament Disks ..... ea 14

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Hacker 29
Hacker II 33
Little Computer People 31
Paintworks 46

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SOFTWARE LIBRARY

Antic type-in listing section includes every full-length program from this issue. Listings are easier to type and proofread, easy to remove and save in a binder if you wish.

DISK SUBSCRIBERS: Programs for 8-bit Atari computers can be used immediately. Just follow instructions in the accompanying magazine articles. ST Owners: See monthly disk's ST Help File for instructions on how to transfer programs to 3-1/2 inch disk.

Antic program listings are typeset on the Star's SB-10 printer—from Star Micronics, Inc., 200 Park Avenue, New York, NY 10166.

TYPING SPECIAL ATARI CHARACTERS

Antic printed program listings leave a small space between each Atari Special Character for easier reading. Immediately below you will see the way **Antic** prints all the standard Atari letters and numbers, in upper and lower case, in normal and inverse video.

ABCDEFGHIJKLMNOPQRSTUVWXYZ
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
abcdefghijklmnopqrstuvwxyz
0123456789 0123456789

The Atari Special Characters and the keys you must type in order to get them are shown in the two boxes below.

NORMAL VIDEO

FOR THIS	TYPE THIS	FOR THIS	TYPE THIS
	CTRL ,		CTRL S
	CTRL A		CTRL T
	CTRL B		CTRL U
	CTRL C		CTRL V
	CTRL D		CTRL W
	CTRL E		CTRL X
	CTRL F		CTRL Y
	CTRL G		CTRL Z
	CTRL H		ESC ESC
	CTRL I		ESC CTRL −
	CTRL J		ESC CTRL =
	CTRL K		ESC CTRL +
	CTRL L		ESC CTRL *
	CTRL M		CTRL .
	CTRL N		CTRL ;
	CTRL O		ESC CTRL =
	CTRL P		ESC SHIFT CLEAR
	CTRL Q		ESC DELETE
	CTRL R		ESC TAB

INVERSE VIDEO

FOR THIS	TYPE THIS	FOR THIS	TYPE THIS
	人 CTRL ,		CTRL X
	人 CTRL A		CTRL Y
	人 CTRL B		CTRL Z
	人 CTRL C		ESC SHIFT DELETE
	人 CTRL D		ESC SHIFT INSERT
	人 CTRL E		ESC CTRL TAB
	人 CTRL F		ESC SHIFT TAB
	人 CTRL G		人 CTRL .
	人 CTRL H		人 CTRL ;
	人 CTRL I		人 SHIFT =
	人 CTRL J		ESC CTRL 2
	人 CTRL K		ESC CTRL DELETE
	人 CTRL L		ESC CTRL INSERT
	人 CTRL M		
	人 CTRL N		
	人 CTRL O		
	人 CTRL P		
	人 CTRL Q		
	人 CTRL R		
	人 CTRL S		
	人 CTRL T		
	人 CTRL U		
	人 CTRL V		
	人 CTRL W		

Whenever the CONTROL key (CTRL on the 400/800) or SHIFT key is used, *hold it down* while you press the next key. Whenever the ESC key is pressed, *release* it before you type the next key.

Turn on inverse video by pressing the Reverse Video Mode Key . Turn it off by pressing it a second time. (On the 400/800, use the Atari Logo Key 人 instead.)

Among the most common program typing mistakes are switching certain capital letters with their lower-case counterparts—you need to look especially carefully at P, X, O and 0 (zero).

Some of Atari Special Characters are not easy to tell apart from standard alpha-numeric characters. Usually the Special Characters will be boxed. Compare the two sets of characters below:

SPECIAL		STANDARD	
	CTRL F	/	/
	CTRL G	\	SHIFT +
	CTRL N	—	SHIFT −
	CTRL R	-	−
	CTRL S	+	+

HOW TO USE TYPO II (8-BIT)

TYPO II automatically proofreads **Antic**'s type-in BASIC listings for 8-bit Atari computers. It finds the exact line where you made a program typing mistake.

Type in TYPO II and SAVE a copy to disk or cassette. Now type GOTO 32000. When you see the instruction on the screen, type in a single program line **without the two-letter TYPO II code** at the left of the line number. Press the [RETURN] key.

Your line will reappear at the bottom of the screen with a two-letter TYPO II code on the left. If this code is not exactly the same as the line code printed in the magazine, you mistyped something in that line.

To call back any line previously typed, type an asterisk [*] followed (without in-between spaces) by the line number, then press [RETURN]. When the complete line appears at the top of the screen, press [RETURN] again. This is also the way you use TYPO II to proofread itself.

To LIST your program, press [BREAK] and type LIST. To return to TYPO II, type GOTO 32000.

To remove TYPO II from your program, type LIST "D:FILENAME",0,31999 [RETURN] (Cassette owners LIST "C:). Type NEW, then ENTER "D:FILENAME"[RETURN](Cassette—ENTER "C:). Your program is now in memory without TYPO II and you can SAVE or LIST it to disk or cassette.

Don't type the TYPO II Codes!

```
WB 32000 REM TYPO II BY ANDY BARTON
VM 32010 REM VER. 1.0 FOR ANTIC MAGAZINE
HS 32020 CLR :DIM LINE$(120):CLOSE #2:CLO
   SE #3
BN 32030 OPEN #2,4,0,"E":OPEN #3,5,0,"E"
YC 32040 ? "↖":POSITION 11,1:? "TYPO II "

EM 32050 TRAP 32040:POSITION 2,3:? "Type
   in a program line"
HS 32060 POSITION 1,4:? " ":INPUT #2;LINE
   $:IF LINE$="" THEN POSITION 2,4:LIST B
   :GOTO 32060
XH 32070 IF LINE$(1,1)="*" THEN B=VAL(LIN
   E$(2,LEN(LINE$))):POSITION 2,4:LIST B:
   GOTO 32060
TH 32080 POSITION 2,10:? "CONT"
MF 32090 B=VAL(LINE$):POSITION 1,3:? " ";
NY 32100 POKE 842,13:STOP
CN 32110 POKE 842,12
ET 32120 ? "↖":POSITION 11,1:? " TYPO II 
   ":POSITION 2,15:LIST B
CE 32130 C=0:ANS=C
QR 32140 POSITION 2,16:INPUT #3;LINE$:IF
   LINE$="" THEN ? "LINE ";B;" DELETED":G
   OTO 32050
VV 32150 FOR D=1 TO LEN(LINE$):C=C+1:ANS=
   ANS+(C*ASC(LINE$(D,D))):NEXT D
WJ 32160 CODE=INT(ANS/676)
JW 32170 CODE=ANS-(CODE*676)
EH 32180 HCODE=INT(CODE/26)
BH 32190 LCODE=CODE-(HCODE*26)+65
HB 32200 HCODE=HCODE+65
IE 32210 POSITION 0,16:? CHR$(HCODE);CHR$
   (LCODE)
VG 32220 POSITION 2,13:? "If CODE does no
   t match press  RETURN  and edit line a
   bove.":GOTO 32050
```

Antic's third annual SynCalc 1040 template

'86 FEDERAL INCOME TAX SPREADSHEET

Article on page 38

LISTING 1

```
A5 1
A6 2
A7 3
A8 4
A9 5
A12 6f
A14 7
A15 8
A16 9a
A17  9b
A18   c
A19 10
A20 11
A21 12
A22 13
A23 14
A24 15
A25 16
A26 17a
A27   b
A28 18
A29 19
A30 20a
A31   b
A32 21a
A33   b
A34 22
A35 23
A37 24
A38 25
A39 26
A40 27
A41 28
A42 29
A43 30
A44 31
A46 32
A48 33
A49 34a
A50   b
A51   c
A52   d
A53 35
A54 36
A55 37
A56 38
A57 39
A58 40
A60 41
A61 42
A62 43
A63 44
A64 45
A65 46
A66 47
A67 48
A68 49
A70 50
A71 51
A72 52
A73 53
A74 54
A75 55
A77 56
A78 57
A79 58
A80 59
A81 60
A82 61
A83 62
A84 63
A86 64
A87 65
A88 66
A89 67
A95 1
A96 2a
A97   b
A98   c
A99 3
A100 4
A101 5
A103 6
A104 7
A105 8a
A106   b
A107 9
A108 10
A110 11a
A111   b
A112 12
A113 13
A114 14
A116 15a
A117   b
A118 16
A119 17
A120 18
A122 19
```

continued on next page

```
A124 20
A125 21
A126 22
A127 23
A129 24
A130 25
A137 26
A143 1
A144 2
A147 3
A149 4
A152 5
A153 6
A154 7
A155 8
A156 9
A161 1
A162 2
A163 3
A164 4
A165 5
A167 6
A168 7
A169 8
A170 9
A171 10
A172 11
A173 12
A174 13
A175 14
A177 15
A178 16
A179 17
A180 18
A181 19
A182 20
A183 21
A184 22
A185 23
A186 24
A187 25
A188 26
A189 27
A190 28
A195 1
A196 2
A197 3a
A198  b
A199  c
A200 4
A215 5
A216 6
A217 7
A218 8
A224 1
A225 2
A226 3
A228 4
A230 5
A231 6
A232 7
A233 8

B1 1986 Income Tax Calculator Form 1040
B2 Recalculate this sheet 5 times!
B4 Filing status
B5 Single
B6 Married--joint
B7 Married--separate
B8 Head/household
B9 Widow(er)
B10 (Select one)
B12 Total exemptions
B14 Wages, etc.
B15 Interest (Sched B)
B16 Dividends
B17 Exclusion
B19 Tax refunds
B20 Alimony received
B21 Business (Sched C)
B22 Capital gain (Sched D)
B23 40% Cap Gain
B24 Supplemental gains
B25 Fully taxable pension
B26 Other pension received
B27 Other pension taxable
B28 Rents, etc. (Sched E)
B29 Farm (Sched F)
B30 Unemployment comp recd
B31 Unemployment comp, taxable
B32 Soc. sec. received
B33 Soc. sec., taxable
B34 Other income
B35 TOTAL INCOME
B37 Moving expenses
B38 Employee bus Form 2106
B39 IRA deduction
B40 Keogh
B41 Withdrawal penalty
B42 Alimony paid
B43 Marriage deduction
B44 TOTAL INCOME ADJUSTMENTS
B46 Adj. gross income
B48 Adj. gross income
B49 Itemized ded. (Sched A)
B50 Contrib.--cash
B51 Contrib.--non-cash
B52 Total
B53 Net income
B54 Exemption value
B55 Net taxable income
B56 ENTER TAX HERE
B57 Additional taxes
B58 TOTAL TAX
B60 Care credit Form 2441
B61 Elderly credit Sched R
B62 Politcl contrb credit
B63 Total misc. credit
B64 Net tax +/- credit
B65 Foreign tax credit
B66 Business credit
B67 Total Business Credit
B68 Net tax + credit
B70 Self employment (Sched SE)
B71 Alt. min. tax (Form 6251)
B72 Rcp invst cred tax Form 4255
B73 Tip inc. SS tax Form 4137
B74 Tax on IRA (Form 5329)
B75 TOTAL TAX
B77 Withheld
B78 1986 est. payments
B79 Earned income credit
B80 Form 4868 payment
B81 Excess FICA
B82 Fuel tax crd Form 4136
B83 Rg in co crd Form 2439
B84 TOTAL payments
B86 Amount overpaid
B87 Amount to refund to you
B88 Amount for '87 tax
B89 Amount owed
B92 Schedule A--Itemized Deductions
B94 Medical
B95 Prescriptions
B96 Doctors, etc.
B97 Transportation
B98 Other
B99 Total
B100 Less 5% of income
B101 Deduction
B102 Taxes
B103 Income
B104 Real estate
B105 General sales
B106 Motor vehicle sales
B107 Other
B108 Deduction
B109 Interest
B110 Mortgage--bank
B111 Mortgage--indiv.
B112 Credit cards
B113 Other
B114 Deduction
B115 Contribut
B116 Cash--small
B117 Cash--large
B118 Non-cash
B119 Carryover
B120 Deduction
B122 Casualty loss
B123 Miscellaneous
B124 Dues
B125 Tax prep
B126 Other
B127 Deduction
B129 Sum of deductions
B130 Status deduction
B131 Status 1:
B132 Status 2:
B133 Status 3:
B134 Status 4:
B135 Status 5:
B137 Total deductions
B140 Schedule B--Interest/Dividend Income
B142 Interest
B143 Seller-financed mortgages
B144 Other interest
B147 TOTAL INTEREST
B149 Dividends
B152 Total
B153 Cap. gain dist.
B154 Nontaxable dist.
B155 Total dist.
B156 Total dividends
B159 Schedule G--Income Averaging
B161 1983 Form 1040 line 37
B162 1984 Form 1040 line 37
B163 1985 Form 1040 line 37
B164 Outside US income 1983-5
B165 TOTAL
B167 Divide by 3
B168 Multiply by 140%
B169 1986 income Form 1040,line 37
B170 Premature distrib.
B171 Net of distrib.
B172 Community state
B173 Net of lines 11 & 10
B174 Line 7
B175 Averageable income
B177 25% of averageable income
B178 Line 7
B179 Total of lines 15 & 16
B180 Line 11
B181 Total of lines 17 & 18
B182 Tax on line 19 from Tax Sched
B183 Tax,line 17,Tax Sched
B184 Tax,line 16,Tax Sched
```

```
B185 Net of lines 21 & 22
B186 300% of line 23
B187 Tax on line 8
B188 Tax on line 10.
B189 Net of lines 25 & 26
B190 Total Sched G tax
B193 Form 2441--Child Care Credit
B195 Qualifying persons
B196 Qualified expenses
B197 Own earned income
B198 Spouse's earned income
B199 If filing jointly, sm. inc.
B200 Expense base
B202 Percentage table:
B203 0
B204 10001
B205 12001
B206 14001
B207 16001
B208 18001
B209 20001
B210 22001
B211 24001
B212 26001
B213 28001
B215 Deductible percent
B216 Deductible amount
B217 1985 exp pd in '86 at '85 pct
B218 Total credit
B221 Schedule W--Married Couples
B224 Wage,1040 ln 7
B225 Self emplmnt prft
B226 Total earned income
B228 Adjustments (Form 1040,
B229  lines 25-27, 31)
B230 Net qualified income
B231 Smaller from line 5
B232 Percentage
B233 Total deduction

C1 ome T
C2 ate t
C4 tatus
C6 -join
C7 -sepa
C8 sehol
C9 )
C10 one)
C12 empti
C14 tc.
C15  (Sch
C16 s
C17 n
C19 nds
C20 recei
C21  (Sch
C22 gain
C23 Gain
C24 ntal
C25 xable
C26 nsion
C27 nsion
C28 tc. (
C29 hed F
C30 ment
C31 ment
C32 . rec
C33 ., ta
C34 come
C35 COME
C37 xpens
C38  bus
C39 ction
C41 al pe
C42 paid
C43  dedu
C44 COME
C46 ss in
C48 ss in
C49  ded.
C50 --cas
C51 --non
C53 me
C54 n val
C55 ble i
C56 X HER
C57 al ta
C58 X
C60 dit F
C61 credi
C62 contr
C63 sc. c
C64 +/- c
C65 tax c
C66  cred
C67 sines
C68 + cre
C70 loyme
C71 . tax
C72 t cre
C73  SS t
C74 RA (F
C75 X
C78 . pay
C79 ncome
C80 8 pay
C81 ICA
C82  crd
C83  crd
C84 yment
C86 verpa
C87 o ref
C88 or '8
C89 wed
C92  A--I
C95 tions
C96  etc.
C97 tatio
C100 of in
C101 n
C104 ate
C105 sales
C106 hicle
C108 n
C110 --ban
C111 --ind
C112 ards
C114 n
C115 t
C116 all
C117 rge
C119 r
C120 n
C122  loss
C123 neous
C127 n
C129 educt
C130 educt
C131 :
C132 :
C133 :
C134 :
C135 :
C137 ducti
C140  B--I
C143 inanc
C144 teres
C147 TERES
C149 s
C153 n dis
C154 le di
C155 st.
C156 viden
C159  G--I
C161 m 104
C162 m 104
C163 m 104
C164 US in
C167 y 3
C168  by 1
C169 ome F
C170 e dis
C171 istri
C172 y sta
C173 ines
C175 ble i
C177 verag
C179  line
C181  line
C182 ine 1
C183  17,T
C184  16,T
C185 ines
C186 line
C187 ine 8
C188 ine 1
C189 ines
C190 hed G
C193 1--Ch
C195 ng pe
C196 d exp
C197 ed in
C198  earn
C199 g joi
C200 base
C202 ge ta
C215 le pe
C216 le am
C217  pd i
C218 edit
C221  W--M
C224 0 ln
C225 lmnt
C226 rned
C228 nts (
C229 5-27,
C230 ified
C231 from
C232 ge
C233 ducti
D1 ax Ca
D2 his s
D6 t
D7 rate
D8 d
D12 ons
D15 ed B)
D20 ved
D21 ed C)
D22 (Sche
D24 gains
D25  pens
D26  rece
D27  taxa
D28 Sched
D29 )
D30 comp
D31 comp,
D32 eived
D33 xable
D37 es
D38 Form
D41 nalty
D43 ction
D44 ADJUS
D46 come
D48 come
D49  (Sch
D50 h
D51 -cash
D54 ue
D55 ncome
D56 E
D57 xes
D60 orm 2
D61 t Sch
D62 b cre
D63 redit
D64 redit
D65 redit
D66 it
D67 s Cre
D68 dit
D70 nt (S
D71  (For
D72 d tax
D73 ax Fo
D74 orm 5
D78 ments
D79  cred
D80 ment
D82 Form
D83 Form
D84 s
D86 id
D87 und t
D88 7 tax
D92 temiz
D97 n
D100 come
D106  sale
D110 k
D111 iv.
D129 ions
D130 ion
D131 @IF ([F10]=1 THEN 2480 ELSE 0)
D132 @IF ([F10]=2 THEN 3670 ELSE 0)
D133 @IF ([F10]=3 THEN 1835 ELSE 0)
D134 @IF ([F10]=4 THEN 2480 ELSE 0)
D135 @IF ([F10]=5 THEN 3670 ELSE 0)
D137 ons
D140 ntere
D143 ed mo
D144 t
D147 T
D153 t.
D154 st.
D156 ds
D159 ncome
D161 0 lin
D162 0 lin
D163 0 lin
D164 come
D168 40%
D169 orm 1
D170 trib.
D171 b.
D172 te
D173 11 &
D175 ncome
D177 eable
D179 s 15
D181 s 17
D182 9 fro
D183 ax Sc
D184 ax Sc
D185 21 &
D186 23
D188 0.
D189 25 &
D190  tax
D193 ild C
D195 rsons
D196 enses
D197 come
D198 ed in
D199 ntly,
D202 ble:
D215 rcent
D216 ount
D217 n '86
D221 arrie
D224 7
D225 prft
D226 incom
D228 Form
D229  31)
D230  inco
D231 line
D233 on
E1 lcul
E2 heet
E22 d D)
E25 ion
E26 ived
E27 ble
E28  E)
E30 recd
E31  tax
E38 2106
```

continued on next page

```
E44 TMEN
E49 ed A
E60 441
E61 ed R
E62 dit
E67 dit
E70 ched
E71 m 62
E72  For
E73 rm 4
E74 329)
E79 it
E82 4136
E83 2439
E87 o yo
E92 ed D
E106 s
E140 st/D
E143 rtga
E159  Ave
E161 e 37
E162 e 37
E163 e 37
E164 1983
E169 040,
E173 10
E177  inc
E179 & 16
E181 & 18
E182 m Ta
E183 hed
E184 hed
E185 22
E189 26
E193 are
E198 come
E199  sm.
E217  at
E221 d Co
E226 e
E228 1040
E230 me
E231 5
F1 ator Fo
F2  5 time
F10 0
F16 0
F17 0
F26 0
F30 0
F31 able
F32 0
F37 0
F38 0
F39 0
F40 0
F41 0
F42 0
F43 0
F44 TS
F49 )
F50 0
F51 0
F60 +G218
F61 0
F62 0
F65 0
F66 0
F70  SE)
F71 51)
F72 m 4255
F73 137
F77 0
F78 0
F79 0
F80 0
F81 0
F82 0
F83 0
F87 u
F88 0
F92 eductio
F95 0
F96 0
F97 0
F98 0
F99 @SUM(F95:F98)
F100 G46*0.05
F103 0
F104 0
F105 0
F106 0
F107 0
F109 0
F110 0
F111 0
F112 0
F113 0
F116 0
F117 0
F118 0
F119 0
F124 0
F125 0
F126 0
F140 ividend
F143 ges
F153 0
F154 0
F159 raging
F164 -5
F169 line 37
F177 ome
F182 x Sched
F183 0
F184 0
F187 0
F188 0
F193 Credit
F199  inc.
F203 0.3
F204 0.29
F205 0.28
F206 0.27
F207 0.26
F208 0.25
F209 0.24
F210 0.23
F211 0.22
F212 0.21
F213 0.2
F217 '85 pct
F221 uples
F223 You
F224 0
F225 0
F226 F224+F225
F228 ,
F229 0
F230 +F226-F229
G1 rm 1040
G2 s!
G12 0
G14 0
G15 0
G18 F16-F17
G19 0
G20 0
G21 0
G22 0
G23 0
G24 0
G25 0
G27 0
G28 0
G29 0
G31 0
G33 0
G34 0
G35 @SUM(G14:G34)
G44 @SUM(F37:F43)
G46 G35-G44
G48 G46
G49 G137
G52 F50+F51
G53 @IF G52>G49 THEN G48-G52 ELSE G48-G49
G54 1080*G12
G55 @IF G53>G54 THEN G53-G54 ELSE 0
G56 +G190
G57 0
G58 G56+G57
G63 @SUM(F60:F62)
G64 G58-G63
G67 F65+F66
G68 G64-G67
G70 0
G71 0
G72 0
G73 0
G74 0
G75 @SUM(G68:G74)
G84 @SUM(F77:F83)
G86 @IF G84>G75 THEN G84-G75 ELSE 0
G87 @IF (G86<>0 THEN G86-F88 ELSE 0)
G89 @IF G75>G84 THEN G75-G84 ELSE 0
G92 ns
G101 @IF F99>F100 THEN F99-F100 ELSE 0
G108 @SUM(F103:F107)
G114 @SUM(F110:F113)
G120 @SUM(F116:F119)
G122 0
G127 @SUM(F124:F126)
G129 @SUM(G101:G127)
G135 @SUM(D131:D135)
G136 0
G137 +G129-G135
G140  Income
G143 0
G144 0
G145 0
G146 0
G147 @SUM(G143:G146)
G149 0
G150 0
G151 0
G152 @SUM(G149:G151)
G155 F153+F154
G156 G152-G155
G161 0
G162 0
G163 0
G164 0
G165 @SUM(G161:G164)
G167 @INT(G165/3)
G168 G167*1.4
G169 G55
G170 0
G171 G169-G170
G172 0
G173 @IF G171>G172 THEN G171-G172 ELSE 0
G174 G168
G175 G173-G174
G177 G175*0.25
G178 G168
G179 G177+G178
G180 G172
G181 G179+G180
G182 0
G185 +F183-F184
G186 G185*3
G189 F187-F188
G190 G182+G186+G189
G195 0
G196 0
G197 0
G198 0
G199 @MIN(G197,G198)
G200 @IF G198=0 THEN @MIN(G196:G197) ELSE @MIN(G196:G199)
G215 @LOOKUP(G48,B203:B213,4)
G216 G200*G215
G217 0
G218 G216+G217
G223 Spouse
G224 0
G225 0
G226 G224+G225
G229 0
G230 +G226-G229
G231 @MIN(F230:G230)
G232        10%
G233 G231*0.1
H4 @SUM(B10:G255)
H5 H4-1910898
```

game of the month

TAXMAN

Article on page 35

LISTING 1

Don't type the TYPO II Codes!

```
LI 10 REM TAXMAN
MW 14 REM BY "RASSILON" (ROBERT PATTON)
VY 16 REM (C) 1987 ANTIC PUBLISHING INC.
OX 18 BRK=1:IF PEEK(53279)=5 THEN BRK=0
AQ 20 GOSUB 520:GOSUB 340:GOTO 200
MB 30 S=PEEK(632):T=PEEK(644)
FN 40 C=C+((S=6)+(S=7)+(S=5))-((S=10)+(S=
   11)+(S=9)):R=R+((S=9)+(S=13)+(S=5))-((
   S=10)+(S=14)+(S=6))
PX 50 IF C<2 THEN C=2:IF T=0 THEN C=17
VR 60 IF R<2 THEN R=2:IF T=0 THEN R=17
XX 70 IF C>17 THEN C=17:IF T=0 THEN C=2
FK 80 IF R>17 THEN R=17:IF T=0 THEN R=2
BY 90 IF BRK THEN POKE 16,112:POKE 53774,
   112
VS 95 POKE 77,0:POKE HCLR,0:RETURN
YK 100 LOCATE C,R,POM:CO=C:RO=R
TK 110 GOSUB 30
UZ 120 X=USR(ADR(R$),PMM+20,MSL(1),71)
WF 130 X=USR(ADR(R$),PMM+20,MSL(2),71)
AU 140 POKE HM(3),HM3:HM3=HM3+2+L:IF HM3>
   198 THEN HM3=56:HM1=HM1+8:IF HM1>199-8
   *L THEN HM1=103
CC 150 POKE HM(0),HM0:HM0=HM0-2-L:IF HM0<
   56 THEN HM0=198:HM2=HM2-8:IF HM2<55+8*
   L THEN HM2=151
LW 160 POKE HM(1),HM1:POKE HM(2),HM2
KV 170 IF C=9 AND R=8 THEN 190
IU 180 IF PEEK(53256) OR PEEK(53257) OR P
   EEK(53258) OR PEEK(53259) THEN GOSUB 2
   60:GOTO 200
WN 190 POKE HCLR,0:IF CO=C AND RO=R THEN
   110
YE 200 P0=48+8*C:POKE HP0,P0:X=USR(Z,PMP0
   +6):X=USR(M,PMP0,PMP0+16+4*R,4)
OM 210 IF POM=32 THEN 100
WE 220 POM=POM-1:IF POM=38-L THEN SC=SC+1
   *L:POSITION 3,0:? #6;SC;:CNT=CNT+1
BC 230 IF CNT=MCNT THEN GOSUB 480:GOTO 20
   0
RC 240 IF POM<=38-L THEN POM=32
VZ 250 COLOR POM:PLOT CO,RO:GOTO 100
HN 260 E=ADR(E$):FOR V=14 TO 0 STEP -1:PO
   KE 704,14+16*V:SOUND 0,114,0,V:SOUND 1
   ,136,4,V
UJ 270 X=USR(Z,PMP0+6):X=USR(M,E,PMP0+14+
   4*R,8):E=E+8:SDL=PEEK(560)
NQ 280 IF E>ADR(E$)+56 THEN E=ADR(E$):POK
   E 53256,1:P0=P0-4:POKE HP0,P0
ME 290 FOR W=0 TO 24+2*V:POKE 709,W:NEXT
   W:NEXT V
OT 291 C=9:R=8:POKE HCLR,0:POKE 53256,0:M
   EN=MEN-1:POSITION 16,0:? #6;MEN;"◣";:P
   OKE 704,28:POKE 709,150
AK 300 IF MEN=0 THEN GOSUB 320:GOSUB 340:
   POP :GOTO 200
ZB 310 RETURN
LT 320 POKE HP2,0:POSITION 6,8:? #6;"GAME
   OVER";:POSITION 0,21:? #6;"  PRESS FI
   REBUTTON  ":IF STRIG(0)=1 THEN 320
ZF 330 RETURN
WD 340 GOSUB 490:GOSUB 510:MEN=10:L=1:GOS
   UB 440
DY 350 CSL=PEEK(53279)
UJ 355 POSITION 3,5:? #6;"(C) 1987 ANTIC"
TG 360 POSITION 3,20:? #6;"&SELECT LEVEL&
   ";
PN 370 POSITION 0,21:? #6;"&taxman BY RAS
   SILON&";
IU 380 POSITION 3,22:? #6;"&START A GAME&
   ";
SN 390 POSITION 8,19:? #6;"L=";L;:FOR W=0
    TO 15:NEXT W
VQ 400 IF (PEEK(632)=14 AND PEEK(644)=0)
   OR CSL=5 THEN L=L+1:IF L=6 THEN L=1
RG 410 IF (PEEK(632)=15 AND PEEK(644)=0)
   OR CSL=6 THEN 430
OK 420 GOTO 350
AL 430 SC=0:GOSUB 490:GOSUB 450:GOSUB 470
   :RETURN
ND 440 COLOR 38:FOR CC=1+L TO 18-L:FOR RR
   =1+L TO 18-L:PLOT CC,RR:NEXT RR:NEXT C
   C:COLOR 32:PLOT 9,8:RETURN
ZJ 450 C=9:R=8:CO=C:RO=R:CNT=0:HM0=198:HM
   1=103:HM2=151:HM3=56:MCNT=18-2*L:MCNT=
   MCNT*MCNT-1
KP 460 GOSUB 440:POKE HP2,120:RETURN
DL 470 POSITION 3,0:? #6;"&%$";MEN;"◣";:POSITION 13,0
   :? #6;"&%$";MEN;"◣";:POSITION 8,19:? #
   6;"L=";L:RETURN
PI 480 SC=SC+100*L*MEN:MEN=MEN+2*L:L=L+1:
   GOSUB 490:GOSUB 450:GOSUB 470:RETURN
AS 490 POKE HP2,0:FOR I=2 TO 18:POSITION
   2,I:? #6;"                ":NEXT I
FB 500 FOR I=20 TO 22 STEP 2:POSITION 3,I
   :? #6;"              ":NEXT I:RETURN
DZ 510 COLOR 10:PLOT 0,0:DRAWTO 19,0:DRAW
   TO 19,19:DRAWTO 0,19:DRAWTO 0,0:RETURN
GJ 520 DIM R$(54),HM(3),MSL(3),E$(56)
CF 540 E$="[graphics characters]":E$(3,3)=CH
   R$(34):E$(6,6)=CHR$(34)
CC 570 FOR I=0 TO 3:HM(I)=53252+I:NEXT I:
   MSL(0)=252:MSL(1)=243:MSL(2)=207:MSL(3
   )=67
LB 580 R$="[graphics characters]"
RR 620 Z=ADR("[graphics characters]")
UT 630 M=ADR("[graphics characters]")
GK 640 CS=PEEK(756)*256:PMB=PEEK(740)-8:P
   OKE 54279,PMB:HP0=53248:MYCS=PMB-4:POK
   E 106,MYCS-4
NJ 650 GRAPHICS 17:POKE 708,196:POKE 709,
   150:POKE 710,68:POKE 756,MYCS:MYCS=MYC
   S*256:X=USR(M,CS,MYCS,1024)
ZG 660 PMB=PMB*256:POKE 559,46:POKE 53277
   ,3:POKE 623,1:PMP0=PMB+512:PMM=PMB+384
   :X=USR(Z,PMM):HCLR=53278
RW 670 PMP2=PMB+768:X=USR(Z,PMP2):HP2=532
   50:P2=120:FOR I=0 TO 3:READ D:POKE PMP
   2+48+I,D:NEXT I:DATA 60,36,36,60
LZ 680 FOR I=704 TO 707:POKE I,28:NEXT I
YU 690 FOR I=25 TO 85 STEP 12:POKE PMM+I,
   60:POKE PMM+I+1,60:NEXT I
TD 700 FOR I=35 TO 80 STEP 20:POKE PMM+I,
   3:POKE PMM+I+1,3:NEXT I
XA 710 POKE PMM+27,192:POKE PMM+28,192
TK 720 POKE PMM+43,192:POKE PMM+44,192
DY 730 POKE PMM+67,192:POKE PMM+68,192
AI 740 POKE PMM+83,192:POKE PMM+84,192
DF 750 FOR I=0 TO 39:READ D:POKE MYCS+16+
   I,D:NEXT I:FOR I=0 TO 7:POKE MYCS+80+I
   ,255:NEXT I
WV 760 DATA 0,102,102,0,0,102,102,0,231,2
   31,231,0,0,231,231,231,0,0,0,24,24,0,0
   ,0,0,0,60,60,60,60,0,0
VF 770 DATA 0,126,126,126,126,126,126,0
DK 780 X=USR(Z,PMP0):FOR X=PMP0 TO PMP0+3
   :POKE X,255:NEXT X:RETURN
```

LISTING 2

```
AN 10 REM TAXMAN, LISTING 2
MP 20 REM BY "RASSILON" (ROBERT PATTON)
HA 30 REM (C) 1987, ANTIC PUBLISHING
```

continued on next page

```
KT 35 REM (CREATES LINES 540 AND 580-630
   FOR TAXMAN)
CQ 40 REM (LINES 10-220 MAY BE USED WITH
   OTHER BASIC LOADERS IN THIS ISSUE.
IS 45 REM CHANGE LINE 70 AS NECESSARY.)
MG 50 DIM FN$(20),TEMP$(20),AR$(93)
HO 60 DPL=PEEK(10592):POKE 10592,255
WO 70 FN$="D:LINES.LST":REM THIS IS THE N
   AME OF THE DISK FILE TO BE CREATED
YS 80 GRAPHICS 0:? "      ANTIC'S GENERIC
   BASIC LOADER"
CD 90 ? ,"BY CHARLES JACKSON"
PW 100 POKE 10592,DPL:TRAP 170
PO 110 ? :? :? "Creating ";FN$:? "...plea
   se stand by."
LQ 120 RESTORE :READ LN:LM=LN:DIM A$(LN):
   C=1
BK 130 AR$="":READ AR$
XW 140 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
   2,255
DG 150 LM=LM-1:POSITION 10,10:? "(Countdo
   wn...T-";INT(LM/10);")     "
UY 160 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+
   1:NEXT X:GOTO 130
MZ 170 IF PEEK(195)=5 THEN ? :? :? "TOO
   MANY DATA LINES!":? "CANNOT CREATE FIL
   E!":END
CZ 180 IF C<LN+1 THEN ? :? "TOO FEW DATA
    LINES!":? "CANNOT CREATE FILE!":END
AL 200 OPEN #1,8,0,FN$
PP 210 POKE 766,1:? #1;A$;:POKE 766,0
AF 220 CLOSE #1:GRAPHICS 0:? "COMPLETED
   "
ID 1000 DATA 254
XB 1010 DATA 053052048032069036061034000
   0080420920200420080000008065004168020001
   064008148001020160001020001
DN 1020 DATA 136145074032130065002084137
   0720010640001300010080661290000000000000
   128001066000000000000000000
TN 1030 DATA 000000034058069036040051044
   0510410610670720820360400051052041058069
   036040054044054041061067072
GQ 1040 DATA 082036040051052041155053056
   0480320820360610341041041332041041332030
   104104133205104104168165205
BU 1050 DATA 073255049203072177203037205
   1452031361652050732550492032000172031451
   203136208235165205049203145
ZQ 1060 DATA 203104017203145203096034155
   0540500480320900610650680820400341041041
   133213104133212169000168145
XI 1070 DATA 212200208251096034041155054
   0510480320770610650680820400341041041331
   241104133240104133213104133
VE 1080 DATA 212104133239104133238160000
   1772401452122302122080022302132302402080
   002230241198238208234198239
AM 1090 DATA 016230096034041155
```

easy soundtrack for your programs

Article on page 16

PAGE 6 GRAB-BAG: PART 2

LISTING 1

Don't type the TYPO II Codes!

```
HI 10 REM SLOWLIST
EB 20 REM BY MIKE EGGERS AND MATT LOVELES
   S
FW 30 REM (c) 1985, ANTIC PUBLISHING
CQ 40 REM (LINES 10-220 MAY BE USED WITH
   OTHER BASIC LOADERS IN THIS ISSUE.
IS 45 REM CHANGE LINE 70 AS NECESSARY.)
MG 50 DIM FN$(20),TEMP$(20),AR$(93)
HO 60 DPL=PEEK(10592):POKE 10592,255
MO 70 FN$="D:AUTORUN.SYS":REM THIS IS THE
    NAME OF THE DISK FILE TO BE CREATED
YS 80 GRAPHICS 0:? "      ANTIC'S GENERIC
   BASIC LOADER"
CD 90 ? ,"BY CHARLES JACKSON"
PW 100 POKE 10592,DPL:TRAP 170
PO 110 ? :? :? "Creating ";FN$:? "...plea
   se stand by."
LQ 120 RESTORE :READ LN:LM=LN:DIM A$(LN):
   C=1
BK 130 AR$="":READ AR$
XW 140 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
   2,255
DG 150 LM=LM-1:POSITION 10,10:? "(Countdo
   wn...T-";INT(LM/10);")     "
UY 160 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+
   1:NEXT X:GOTO 130
MZ 170 IF PEEK(195)=5 THEN ? :? :? "TOO
   MANY DATA LINES!":? "CANNOT CREATE FIL
   E!":END
CZ 180 IF C<LN+1 THEN ? :? "TOO FEW DATA
    LINES!":? "CANNOT CREATE FILE!":END
AL 200 OPEN #1,8,0,FN$
PP 210 POKE 766,1:? #1;A$;:POKE 766,0
AF 220 CLOSE #1:GRAPHICS 0:? "COMPLETED
   "
LO 1000 DATA 96
OP 1010 DATA 255255000000608300616900013
   3002169000613300316500090009002133009169004
   044031208208001096162006160
JK 1020 DATA 032169007032092228096169002
   0440312082080301730820062400112060820006
   169001141255002076098228173
UP 1030 DATA 083006141082006169000141255
   0020760982281690010450312080730011412550
   002076098228000004224002225
JP 1040 DATA 002000006
```

LISTING 2

```
0100 ;SLOWLIST
0110 ;BY MIKE EGGERS AND MATT LOVELESS

0120 ;(c) 1987, ANTIC PUBLISHING
0130      .TITLE "SLOWLIST -- listing c
ontroller"
0140 ;
0150 SETVBV = $E45C  ;Set VBLANK.
0160 XITVBV = $E462  ;VBLANK exit.
0170 CONSOL = $D01F  ;Console buttons
0180 CASINI = $02    ;Cassette boot in
0181 ;                 init. vector.
0190 BOOTF = $09     ;Boot flag
0200 SSFLAG = $02FF  ;Screen start/
0210 ;                 stop flag.
0220      *=  $0600
0230 SETUP
0240      LDA #SETUP&255 ;Lo byte of
0250 ;                     INIT addr.
0260      STA CASINI
0270      LDA #SETUP/256 ;Hi byte
0280      STA CASINI+1
0290      LDA BOOTF     ;Cass. boot?
0300      ORA #$02
0310      STA BOOTF
0320      LDA #$04      ;Check [OPTION].
0330      BIT CONSOL
0340      BNE ON
0350 ;
```

```
0360        RTS            ;If [OPTION] is
0370 ;                      pushed, don't
0380 ;                      set VBLANK
0390 ;                      vectors!
0400 ON
0410        LDX #VBI/256 ;Hi VBI vector.
0420        LDY #VBI&255 ;Lo VBI vector.
0430        LDA #7       ;Use deferred.
0440        JSR SETVBV
0450 ;
0460        RTS
0470 ;
0480 VBI
0490        LDA #$02     ;Deferred VBLANK
0500 ;                    vectors here.
0510        BIT CONSOL   ;Check [SELECT]
0520        BNE NOSELECT
0530 ;
0540        LDA CNTR     ;[SELECT] pushed
0550        BEQ RESET    ;Counter = 0?
0560 ;
0570        DEC CNTR     ;No. Decrement.
0580        LDA #$01     ;Set SSFLAG.
0590        STA SSFLAG
0600        JMP XITVBV
0610 ;
0620 RESET
0630        LDA SPEED
0640        STA CNTR
0650        LDA #$00     ;Don't pause
0660 ;                    this VBLANK.
0670        STA SSFLAG
0680        JMP XITVBV
0690 ;
0700 NOSELECT
0710        LDA #$01     ;Check [START].
0720        AND CONSOL
0730        EOR #$01     ;Flip the
0740 ;                    [START] bit
0750        STA SSFLAG   ; & set SSFLAG.
0760        JMP XITVBV
0770 ;
0780 CNTR
0790        .BYTE 0
0800 SPEED
0810        .BYTE 4      ;initial delay
0820        *=  $02E0
0830        .WORD SETUP
0840        .END
```

LISTING 3

```
JI 1 REM MUSICIAN DEMO
BH 2 REM BY MATT LOVELESS & MIKE EGGERS
GF 3 REM (c) 1987, ANTIC PUBLISHING
WX 10 DIM NT$(56):NT$="[graphics characters]"
YR 11 DIM TIME$(12):TIME$="[graphics characters]"
EY 13 DIM PLAY$(140),MUSIC$(163)
EU 14 MUSIC$="[graphics characters]"
DU 15 MUSIC$(LEN(MUSIC$)+1)="[graphics characters]"
DS 16 MUSIC$(LEN(MUSIC$)+1)="[graphics characters]"
BZ 17 PLAY$="T3 O4 L2 G;A;F; O3 F; O4 L3
   C,,"
LG 18 GRAPHICS 0:POKE 82,2:? :POKE 752,1:
   SETCOLOR 2,5,6:SETCOLOR 1,0,0:? "[graphics]
    MUSICIAN DEMO"
ZY 19 ? "             [graphics characters]"
JX 20 FOR SPD=3 TO 1 STEP -1
MA 30 PLAY$(2,2)=STR$(SPD):X=USR(ADR(MUSI
   C$),ADR(PLAY$),ADR(NT$),ADR(TIME$),10)
TS 40 NEXT SPD
RT 50 ? "                    [graphics]"
OY 60 ? "                   [graphics]"
BI 70 ? "                  [graphics]"
QI 80 ? "                    [graphics]"
DF 85 FOR X=1 TO 200:NEXT X
NM 90 POSITION 0,4:? "[graphics characters]"
KV 95 PLAY$="  CLOSE ENCOUNTERS OF THE AN
   TIC KIND"
CE 100 FOR X=LEN(PLAY$) TO 1 STEP -1:POSI
   TION 0,23:? PLAY$(X);:SOUND 0,200,10,1
   0
VW 110 FOR V=1 TO 10+X/5:NEXT V:SOUND 0,0
   ,0,0:FOR V=1 TO 5+X/5:NEXT V:NEXT X
IR 120 FOR X=1 TO 200:NEXT X
AN 130 FOR X=1 TO 20:POSITION 0,5:? "[graphics]";:
   NEXT X
RG 200 POSITION 2,5:? "AVAILABLE COMMANDS
   :":?
UX 210 ? "   Tx        TEMPO x=(1-3)"
MT 220 ? "   Lx        LENGTH x=(1-4)"
RS 230 ? "   Ox        OCTAVE x=(3-6)"
TU 240 ? "   A-G       NOTE"
TH 250 ? "   #         SHARP"
FC 260 ? "   -         FLAT"
XA 270 ? "   ,         REST OF L1"
EY 280 ? "   ;         1/12 SECOND GAP"
TH 290 ? :?
RR 300 POKE 752,0:? "ENTER YOUR NOTES AND
    COMMANDS"
RA 310 INPUT PLAY$:PLAY$(LEN(PLAY$)+1)=".
   ":? :IF PLAY$="." THEN END
KA 320 TRAP 320:? "[graphics]WHAT VOLUME";:INPUT
   VOL:TRAP 40000
FK 330 X=USR(ADR(MUSIC$),ADR(PLAY$),ADR(N
   T$),ADR(TIME$),VOL)
CN 340 POKE 752,1:? "[graphics characters]";
   :? "ANOTHER TUNE";:INPUT PLAY$:IF LEN(
   PLAY$)=0 THEN 360
ZS 350 IF PLAY$(1,1)="Y" THEN 130
KU 360 GRAPHICS 0:END
```

LISTING 4

```
WV 10 REM MUSICIAN, "HELPER" LISTING
ST 20 REM BY EGGERS/LOVELESS
FW 30 REM (c) 1985, ANTIC PUBLISHING
QD 35 REM (CREATES LINES 10-16 FOR MUSICI
   AN)
CQ 40 REM (LINES 10-220 MAY BE USED WITH
   OTHER BASIC LOADERS IN THIS ISSUE.
IS 45 REM CHANGE LINE 70 AS NECESSARY.)
MG 50 DIM FN$(20),TEMP$(20),AR$(93)
HO 60 DPL=PEEK(10592):POKE 10592,255
WO 70 FN$="D:LINES.LST":REM THIS IS THE N
   AME OF THE DISK FILE TO BE CREATED
YS 80 GRAPHICS 0:? "     ANTIC'S GENERIC
   BASIC LOADER"
CD 90 ? ,"BY CHARLES JACKSON"
PW 100 POKE 10592,DPL:TRAP 170
PO 110 ? :? :? "Creating ";FN$:? "...plea
   se stand by."
LQ 120 RESTORE :READ LN:LM=LN:DIM A$(LN):
   C=1
BK 130 AR$="":READ AR$
XW 140 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
   2,255
DG 150 LM=LM-1:POSITION 10,10:? "(Countdo
   wn...T-";INT(LM/10);")    "
UY 160 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+
   1:NEXT X:GOTO 130
MZ 170 IF PEEK(195)=5 THEN ? :? :? "[graphics]TOO
   MANY DATA LINES!":? "CANNOT CREATE FIL
   E!":END
CZ 180 IF C<LN+1 THEN ? :? :? "[graphics]TOO FEW DATA
    LINES!":? "CANNOT CREATE FILE!":END
AL 200 OPEN #1,8,0,FN$
PP 210 POKE 766,1:? #1;A$;:POKE 766,0
AF 220 CLOSE #1:GRAPHICS 0:? "[graphics]COMPLETED[graphics]
   "
LM 1000 DATA 378
HN 1010 DATA 049048032068073077032078040
   360400530540410580780840360610341440 72
   035000153076037000128064031
FF 1020 DATA 000136068033000243121060029 0
   000000000000217108053000230114057000193
   096047000077102050000182091
FS 1030 DATA 045000000000000001620810400
   001730850420000341550490490320680730 77
   032084073077069036040049050
```

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```
RR 1040 DATA 041058084073077069036061034O
        02004008016005010020040015030060120034
        155049051032068073077032080
GQ 1050 DATA 076065089036040049052048041O
        44077085083073067036040049054051041155
        049052032077085083073067036
RY 1060 DATA 0610341690001332141332161332
        17169002133215104104133219104133218104
        133221104133220104133223104
CO 1070 DATA 1332221041040091601410012101
        64217230217177218170200177218168056233
        049224084208004010010133214
IN 1080 DATA 224076208002133216224079208O
        05056233002133215224034155049053032077
        085083073067036040076069078
EH 1090 DATA 040077085083073067036041043O
        49041061034046208001096224044208005165
        214024144057224059208004169
HK 1100 DATA 0052080522240650481932240721
        76189138056233065010192035208003034155
        049054032077085083073067036
FT 1110 DATA 040076069078040077085083073O
        67036041043049041061034024105003192045
        208003024105001201015144002
ER 1120 DATA 1690010100100241012151681772
        20141000210165214024101216168177222160
        000132020197020176252140000
UL 1130 DATA 210024144131034155
```

LISTING 5

```
0100 ;MUSICIAN
0110 ;BY MIKE EGGERS AND MATT LOVELESS

0120 ;(c) 1987, ANTIC PUBLISHING
0130      .TITLE "MUSICIAN -- Music Pla
yer"
0140 ;
0150 AUDC1 = $D201      ;Control reg for
0160 ;                    sounds
0170 AUDF1 = $D200      ;Tone frequency
0180 ;                    reg.
0190 CLOCK = $14        ;Last byte of
0200 ;                   real-time clock
0210 TEMPO = $D6        ;Tempo index
0220 ;                    number*4
0230 OCTAVE = $D7       ;Octave of note
0240 ;                    (3-6).
0250 DURATN = $D8       ;Tone duration
0211 ;                    index.
0260 ;                   index
0270 POS =    $D9       ;Current pos.
0280 ;                    in string.
0290 ADDR =   $DA       ;Location of
0300 ;                    string.
0310 TONES = $DC        ;Addr of string
0320 ;                    w/note info.
0330 TIME =   $DE       ;Addr of string w
ith duration info
0340 ;                  ; w/duration inf
0350 ;
0360      *=   $0600
0370 ;
0380 TOP
0390      LDA #0        ;Set default
0400      STA TEMPO     ; tempo,
0410      STA DURATN    ; duration,
0420      STA POS       ; position
0430      LDA #2        ; & octave.
0440      STA OCTAVE
0450      PLA           ;Ignore argument
0460 ;                    count.
0470      PLA           ;get addr
0480 ;                    of string.
0490      STA ADDR+1
0500      PLA
0510      STA ADDR
0520      PLA           ;Get addr of
0530 ;                    tone variable.
0540      STA TONES+1
0550      PLA
0560      STA TONES
0570      PLA           ;Get addr of
0580 ;                    time variable.
0590      STA TIME+1
0600      PLA
0610      STA TIME
0620      PLA           ;Ignore hi-byte
0630 ;                    of volume.
0640      PLA           ;Get low-byte
0650 ;                    of volume,
0660      ORA #$A0      ;OR w/distortion
0670 ;                    value,
0680      STA AUDC1     ; init sound.
0690 INC1
0700      LDY POS       ;Find index into
0710 ;                    string.
0720      INC POS       ;Move right
0730      LDA (ADDR),Y  ;Get current
0740 ;                    character.
0750      TAX           ; Save it.
0760      INY           ; Increase again
0770      LDA (ADDR),Y  ;Get operand
0780 ;                    (if any)
0790      TAY           ;Save it.
0800      SEC           ;Make operand
0810 ;                    into an index
0820      SBC #$31      ; by subtracting
0830 ;                    a "1".
0840      CPX #$54      ;Is it a tempo
0850 ;                    command?
0860      BNE TSTDUR    ;No. Try again.
0870 ;
0880      ASL A         ;Multiply by 4
0890 ;                    for an index
0900      ASL A         ; into table.
0910      STA TEMPO     ;Done.
0920 ;
0930 TSTDUR
0940      CPX #$4C      ;A duration cmd?
0950      BNE TSTOCT    ;No. Try again.
0960 ;
0970      STA DURATN    ;Save new
0980 ;                    dur. index.
0990 TSTOCT
1000      CPX #$4F      ;Is it an "O"
1010 ;                    (An Octave?)
1020      BNE TSTPER    ;No. Try again.
1030 ;
1040      SEC           ;subtract two to
1050      SBC #$02      ; find total of
1060 ;                    "3"
1070      STA OCTAVE    ; and save it.
1080 TSTPER
1090      CPX #$2E      ;Is it a period?
1100      BNE TSTCOM    ;No.
1110 ;
1120      RTS
1130 ;
1140 TSTCOM
1150      CPX #$2C      ;Is it a delay?
1160      BNE TSTSEM    ;No.
1170 ;
1180      LDA TEMPO     ;1st duration
1190 ;                    for this tempo
1200      CLC           ; and branch.
1210      BCC DELAY2    ;UNCONDITIONAL!
1220 ;
1230 TSTSEM
1240      CPX #$3B      ;Is it a " ; "?
1250      BNE TSTNOTE   ;No. Try again.
1260 ;
1270      LDA #5        ;Delay for 1/12
1280 ;                    of a second.
1290      BNE DELAY3    ;UNCONDITIONAL!
1300 ;
1310 TSTNOTE
1320      CPX #$41      ;Less than "A" ?
1330      BMI INC1      ;Yes...
1340 ;
1350      CPX #$48      ;Gr. than "G" ?
1360      BCS INC1      ;Yes, so note
1370 ;                    is illegal.
1380 ;
1390      TXA           ;Convert note to
1400 ;                    an index
1410      SEC           ; by subtracting
1420 ;                    an "A"
1430      SBC #$41
1440      ASL A         ;Multiply by two
1450      CPY #$23      ;Is next char.
1460 ;                    a "#" ?
1470      BNE FLAT      ;No. Try again.
1480 ;
1490      CLC           ;get flat of nxt
1500 ;                    higher note.
1510      ADC #3
1520 FLAT
1530      CPY #$2D      ;Is next char a
1540 ;                    "-" ?
```

```
1550       BNE TIMES4   ;No. Try again.
1560 ;
1570       CLC          ;Point to Flat
1580 ;                   value.
1590       ADC #1
1600 TIMES4
1610       CMP #$0F     ;Is Note greater
1620 ;                   than G# ?
1630       BCC TIMES5   ;No.  Try again.
1640 ;
1650       LDA #1       ;Yes. Go back to
1660 ;                   A-flat.
1670 TIMES5
1680       ASL A        ;Multiply note
1690 ;                   by 4 to get a
1700       ASL A        ; table index.
1710       CLC          ;Add octave for
1720       ADC OCTAVE   ; position of
1730 ;                   sound vlue
1740       TAY          ;Prepare to LOAD
1750       LDA (TONES),Y ;get actual
1760 ;                   sound value
1770       STA AUDF1    ; & start note.
1780 DELAY
1790       LDA TEMPO    ;Figure tone
1800 ;                   duration by
1810       CLC          ; by adding
1820 ;                   duration to
1830 ;                   TEMPO*4
1840       ADC DURATN   ; to get index.
1850 DELAY2
1860       TAY          ;Prepare to LOAD
1870       LDA (TIME),Y ;Get actual
1880 ;                   tone duration.
1890 DELAY3
1900       LDY #0       ;Reset clock
1910       STY CLOCK
1920 WAIT
1930       CMP CLOCK    ;Time up?
1940       BCS WAIT     ;No. Continue.
1950 ;
1960       STY AUDF1    ;Turn off sound.
1970       CLC
1980       BCC INC1     ;UNCONDITIONAL!
1990 ;
2000       .END
```

short BASIC routine prevents crashes

ALL ABOUT [BREAK] DISABLING

Article on page 20

LISTING 1

Don't type the TYPO II Codes!

```
ZD 31000 REM CREATE NEW [BREAK] HANDLER
VQ 31010 REM BY BRUCE OWEN BLOSSER
VA 31015 REM (c) 1986, ANTIC PUBLISHING
WJ 31020 POKE 1536,169:POKE 1537,128
NR 31030 POKE 1538,133:POKE 1539,77
VR 31040 POKE 1540,104:POKE 1541,64
VV 31050 POKE 567,INT(1536/256)
FV 31060 POKE 566,1536-PEEK(567)*256
ED 31070 RETURN
```

Print Shop graphics get a new use

DESIGNER LABELS

Article on page 9

LISTING 1

Don't type the TYPO II Codes!

```
QU 1000 REM PSLABELS
ZJ 1005 REM BY JIM PIERSON-PERRY
OF 1010 REM (c) 1987, ANTIC PUBLISHING
VR 1015 REM DO NOT RENUMBER THIS PROGRAM!
EE 1017 BRK=1:IF PEEK(53279)=5 THEN BRK=0
SO 1020 GOTO 2470
IU 1025 IF BRK THEN POKE 16,112:POKE 5377
   4,112
YW 1027 POKE 77,0:RETURN
NX 1030 CLOSE #C6:OPEN #C6,C4,C0,"K:":GNA
   ME$(C1,C16)=BL$(C1,C16):I=C0:POKE 752,
   C0:POKE 764,255
WT 1040 POSITION C7,12:? "Press ESC For
    Directory":POSITION 22,C7:IF I1=C8 TH
   EN POSITION C16,C9
JJ 1050 GET #C6,X:IF (X=32) OR (X>47 AND
   X<58) OR (X>64 AND X<91) THEN 1110
IR 1060 IF X=27 THEN POKE 752,C1:GOSUB 30
   10*(I1=C16)+3140*(I1=C8):I1=C0:RETURN
UA 1070 IF X=155 THEN 1130
VP 1080 IF X<>126 THEN 1050
ZA 1090 IF I=C0 THEN 1050
TO 1100 ? CHR$(X);"_";CHR$(30);:GNAME$(I,
   I)=" ":I=I-C1:GOTO 1050
BE 1110 IF I=I1 THEN 1050
LF 1120 ? CHR$(X);:I=I+C1:GNAME$(I,I)=CHR
   $(X):GOTO 1050
WN 1130 CLOSE #C6:POKE 752,C1:I2=I:POSITI
   ON C7,12:? "Press START To Continue"
FU 1140 FOR I=C1 TO 20:NEXT I:IF PEEK(532
   79)<>C6 THEN 1140
FF 1150 POSITION C0,12:? BL$(C1,39);:POKE
    54286,64:RETURN
FL 1160 POSITION C3,15:? "Please Wait - P
   rocessing Text"
MK 1170 FOR I=C0 TO C6:J=ADR(T$(C26*I+C1,
   C26*I+C1)):K=ADR(P$(208*I+C1,208*I+C1)
   ):X=USR(CADR,J,K,NCHBASE,C26):NEXT I
IE 1180 I1=TOP8:I2=C8:GOSUB 1210:MLOC=TOP
   8+12
FL 1190 L=ADR(P$):FOR X=MLOC TO 2200+MLOC
    STEP 40:J=USR(MOV,L,X,26):L=L+26:NEXT
    X
BT 1200 I1=TOP0:I2=C0:GOSUB 1210:RETURN
US 1210 POKE 88,I1-256*INT(I1/256):POKE 8
   9,INT(I1/256):POKE 87,I2:RETURN
KR 1220 POKE 512,148:POKE 1688,138:POKE 1
   690,142:POKE 1701,188:POKE 54286,192:R
   ETURN
PU 1230 FOR X=C3 TO C16:POSITION C0,X:? B
   L$(C1,39);:NEXT X:RETURN
```

continued on next page

```
HB 1240 A$="ENTER TEXT":POSITION C8,5:GOS
UB 1290:RETURN
LX 1250 A$="NEW FONT":POSITION 22,5:GOSUB
 1290:RETURN
HP 1260 A$="PRINT LABELS":POSITION 7,7:GO
SUB 1290:RETURN
TW 1270 A$="NEW GRAPHIC":POSITION 21,7:GO
SUB 1290:RETURN
FB 1280 A$="EXIT PROGRAM":POSITION 14,9:G
OSUB 1290:RETURN
NM 1290 FOR I=C1 TO LEN(A$):? CHR$(ASC(A$
(I,I))+128*INV);:NEXT I:INV=C0:RETURN
ZF 1300 GOSUB 1230
YA 1310 POSITION 13,C3:? "■NEW GRAPHIC■"
ZD 1320 POSITION C3,C5:? "Insert Graphics
 Disk Into Drive #1"
HG 1330 POSITION C2,C7:? "Enter Graphic N
ame: ________________":I1=C16:GOSUB 10
30:IF I1=C0 THEN 1300
XJ 1340 X=USR(SRADR,BADR,361,C1,C3):IF B$
(C1,15)="PRINT SHOP:CLK!" THEN 1370
GU 1350 ERRN=C1:GOSUB 2340:IF ROPT=C3 THE
N POP :GOTO 2970
TF 1360 GOSUB 1220:GOTO 1300
PX 1370 FOR SECTR=362 TO 393:X=USR(SRADR,
BADR,SECTR,C1,C3)
CM 1380 FOR I=C0 TO 96 STEP 32:IF B$(I+C1
,I+C16)=GNAME$(C1,C16) THEN POP :POP :
GOTO 1410
OB 1390 NEXT I:NEXT SECTR:ERRN=C2:GOSUB 2
340:IF ROPT=C3 THEN POP :GOTO 2970
SP 1400 GOSUB 1220:GOTO 1300
SS 1410 SECTR=ASC(B$(I+17,I+17))+256*ASC(
B$(I+18,I+18))
GK 1420 FOR I=C0 TO 378 STEP 126:X=USR(SR
ADR,BADR,SECTR,C1,C3)
FL 1430 G$(I+C1,I+126)=B$(C1,126):SECTR=A
SC(B$(127,127))+256*ASC(B$(128,128)):N
EXT I
TP 1440 X=USR(SRADR,BADR,SECTR,C1,C3):G$(
505,572)=B$(C1,68):GOSUB 1220
BA 1450 POSITION C9,C1:? GNAME$(C1,C16);
CB 1460 I1=TOP8:I2=C8:GOSUB 1210
YB 1470 L=ADR(G$):FOR X=TOP8 TO 2050+TOP8
 STEP 40:J=USR(MOV,L,X,11):L=L+11:NEXT
 X
CV 1480 I1=TOP0:I2=C0:GOSUB 1210:RETURN
AI 1490 GOSUB 1230
JH 1500 POSITION 15,C3:? "■NEW FONT■":POS
ITION 5,5:? "Insert Font Disk Into Dri
ve #1:"
CD 1510 POSITION C8,C6:? "Enter Name For
 Text Font"
UL 1520 POSITION C3,C7:? "(Use Filename F
ormat XXXXXXXX.FNT)"
LF 1530 POSITION C7,C8:? "(Or INTERNAL Fo
r ROM Font)"
KD 1540 POSITION C16,C9:? "________":I1=C
8:GOSUB 1030:IF I1=C0 THEN 1490
UQ 1550 FOR I=I2 TO C1 STEP -C1:GNAME$(I+
C3,I+C3)=GNAME$(I,I):NEXT I:GNAME$(C1,
C3)="D1:"
IV 1560 GNAME$(I2+C4,I2+C8)=".FNT"
UY 1570 IF GNAME$(C4,11)<>"INTERNAL" THEN
 1600
FP 1580 POSITION C3,15:? "Please Wait - R
elocating Text Font"
RH 1590 GOSUB 3300:I2=11:GOTO 1650
FR 1600 POKE 54286,64:TRAP 1610:CLOSE #C1
:OPEN #C1,C4,C0,GNAME$:TRAP CLEAR:GOTO
 1630
QG 1610 TRAP CLEAR:CLOSE #C1:ERRN=C3:GOSU
B 2340:IF ROPT=C3 THEN POP :GOTO 2970
CE 1620 GOSUB 1220:GOTO 1490
PJ 1630 POKE 852,C0:POKE 853,NCH:POKE 856
,C0:POKE 857,C4:POKE 850,C7
WJ 1640 X=USR(ADR("hhh■LV■"),C16):CLOSE #
C1:GOSUB 1220
FN 1650 POSITION 31,C1:? BL$(C1,C8);:POSI
TION 31,C1:? GNAME$(C4,I2+C3);:GOSUB 1
160:RETURN
AD 1660 GOSUB 1230
LD 1670 POSITION C8,C3:? "■ENTER TEXT■
       EDIT KEYS"
MT 1680 POSITION C0,C5:? "■■■■■■■■■■■■■■■
■■■■■■■■■■■■"
JP 1690 FOR I=C6 TO 12:POSITION C0,I:? "■
":POSITION 27,I:? "■":NEXT I
XZ 1700 POSITION C0,13:? "■■■■■■■■■■■■■■■
■■■■■■■■■■■■"
AR 1710 POSITION 31,C5:? "Center":POSITIO
N 33,C6:? "TAB"
XE 1720 POSITION 32,C8:? "Erase":POSITION
 32,C9:? "CLEAR"
IF 1730 POSITION 31,11:? "Delete":POSITIO
N 30,12:? "BACKSPACE"
VR 1740 POSITION C2,14:? "Type The Label
Text In The Box Above"
BF 1750 POSITION C1,15:? "Use The Control
 Arrows To Move Cursor"
SE 1760 POSITION C5,C16:? "Press ■ESC■ Wh
en Text Is Ready"
FQ 1770 J=C1:Y=C6:I=C1:T$(C1)=" ":T$(182)
=" ":T$(C2)=T$
XX 1780 CLOSE #C6:OPEN #C6,C4,C0,"K:":POK
E 752,C0:POSITION J,Y
WW 1790 GET #C6,X:IF X=27 THEN 2100
AQ 1800 IF X=125 THEN 1860
CX 1810 IF X=126 THEN 1970
DO 1820 IF X=127 THEN 1880
CM 1830 IF (X>27 AND X<32) THEN 1990
ZL 1840 IF (X>-C1 AND X<27) OR (X>31 AND
X<125) THEN 2080
VM 1850 GOTO 1790
AZ 1860 FOR I2=C26*(Y-C6)+C1 TO C26*(Y-C5
):T$(I2,I2)=" ":NEXT I2
XP 1870 POSITION C1,Y:? BL$(C1,C26);:J=C1
:I=C26*(Y-C6)+C1:POSITION J,Y:GOTO 179
0
HD 1880 Z$(C1,C26)=BL$(C1,C26):A$(C1,C26)
=T$(C26*(Y-C6)+C1,C26*(Y-C5))
AI 1890 FOR I2=C1 TO C26:IF A$(I2,I2)<>"
 THEN POP :K=I2:GOTO 1910
PL 1900 NEXT I2:GOTO 1790
CK 1910 FOR I2=C26 TO C1 STEP -C1:IF A$(I
2,I2)<>" " THEN POP :L=I2:GOTO 1930
CP 1920 NEXT I2
FA 1930 IF (C26-L)=(K-C1) THEN 1790
ZH 1940 X=INT((C26+K-L)/C2):Z$(C1,X)=BL$(
C1,X):Z$(X+C1,X+C1+L-K)=A$(K,L)
ZL 1950 POSITION C1,Y:? Z$(C1,C26);:T$(C26*
(Y-C6)+C1,C26*(Y-C5))=Z$(C1,C26):J=C1:I
=C26*(Y-C6)+C1
LF 1960 POSITION J,Y:GOTO 1790
IX 1970 IF J=C1 THEN 1790
NT 1980 ? CHR$(X);:J=J-C1:I=I-C1:T$(I,I)=
" ":GOTO 1790
YK 1990 ON (X-27) GOTO 2000,2020,2040,206
0
OY 2000 IF Y=C6 THEN 1790
GH 2010 ? CHR$(X);:Y=Y-C1:I=I-C26:GOTO 17
90
FS 2020 IF Y=12 THEN 1790
CX 2030 ? CHR$(X);:Y=Y+C1:I=I+C26:GOTO 17
90
HX 2040 IF J=C1 THEN 1790
DA 2050 ? CHR$(X);:J=J-C1:I=I-C1:GOTO 179
0
DE 2060 IF J>25 THEN 1790
ZQ 2070 ? CHR$(X);:J=J+C1:I=I+C1:GOTO 179
0
DY 2080 IF J=27 THEN 1790
AJ 2090 T$(I,I)=CHR$(X):? CHR$(X);:J=J+C1
:I=I+C1:GOTO 1790
GS 2100 CLOSE #C6:POKE 752,C1:FOR I=14 TO
 C16:POSITION C0,I:? BL$(C1,39);:NEXT
I
GK 2110 GOSUB 1160:RETURN
ZI 2120 GOSUB 1230
HI 2130 POSITION 12,C3:? "■PRINT LABELS■"
:POSITION C8,C5:? "# Of Labels To Prin
t = ";:INPUT NLABELS
HY 2140 POSITION 11,11:? "Set-up The Prin
ter":POSITION C9,12:? "Press ■START■ T
o Begin"
FM 2150 FOR X=C1 TO 30:NEXT X:IF PEEK(532
79)<>C6 THEN 2150
MK 2160 POSITION C0,11:? BL$(C1,39);:POKE
 54286,64
SQ 2170 TRAP 2180:OPEN #C2,C8,C0,"P:":TRA
P CLEAR:GOTO 2200
SY 2180 TRAP CLEAR:CLOSE #C2:ERRN=C4:GOSU
B 2340:IF ROPT=C3 THEN POP :GOTO 2970
WF 2190 GOSUB 1220:GOTO 2140
EO 2200 FOR I=C0 TO C6:J=88*I+C1:K=208*I+
C1:X=USR(GADR,ADR(G$(J,J)),ADR(PG$(J,J
)),11)
JC 2210 X=USR(GADR,ADR(P$(K,K)),ADR(PT$(K
,K)),C26):NEXT I
KT 2220 IF P=C1 THEN TRAP 2180:? #C2;"␛E␛
T16":TRAP CLEAR:GOTO 2250
IR 2230 IF P=-C1 THEN TRAP 2180:? #C2;"␛B
2␛3*":TRAP CLEAR:GOTO 2250
RM 2240 TRAP 2180:? #C2;"␛M␛3*":TRAP CLEA
R
HC 2250 POSITION C4,12:? "Press ■OPTION■
To Stop Printing"
```

```
IM 2260 FOR I=C1 TO NLABELS:? #C2:? #C2:I
   F PEEK(53279)=C3 THEN POP :CLOSE #C2:R
   ETURN
PZ 2270 FOR J=C0 TO C6:K=88*J+C1:L=208*J+
   C1
XR 2280 IF P=C1 THEN ? #C2;"S0296";PG$(K
   ,K+87);PT$(L,L+207):NEXT J:GOTO 2300
KM 2290 ? #C2;"LX";CHR$(C0);PG$(K,K+87);
   " LU";CHR$(C0);PT$(L,L+207):NEXT J
EW 2300 NEXT I
CX 2310 IF P=-C1 THEN ? #C2;"B1 2":GOTO
   2330
HI 2320 ? #C2;"P 2"
KX 2330 CLOSE #C2:GOSUB 1220:RETURN
YC 2340 SOUND C0,121,10,C8:SOUND C1,128,1
   0,C8:SOUND C2,C8,C2,C2:FOR X=C1 TO 20:
   NEXT X
LC 2350 FOR X=C0 TO C2:SOUND X,C0,C0,C0:N
   EXT X
MD 2360 POSITION C0,C4:FOR X=C4 TO 15:POS
   ITION C0,X:? BL$(C1,39);:NEXT X
FR 2370 ON ERRN GOTO 2380,2390,2400,2410
DM 2380 POSITION C5,C7:? "NOT A PRINT SHO
   P GRAPHICS DISK":GOTO 2420
MC 2390 POSITION C3,C7:? "REQUESTED GRAPH
   IC NOT ON THIS DISK":GOTO 2420
EX 2400 POSITION C2,C7:? "REQUESTED FONT
   FILE NOT ON THIS DISK":GOTO 2420
EO 2410 POSITION C9,C7:? "PRINTER NOT RES
   PONDING"
DY 2420 POSITION 12,C9:? "BASIC Error #";
   PEEK(195)
IG 2430 POSITION C8,12:? "Press  START  F
   or Re-Try"
NO 2440 POSITION C9,13:? "Press  OPTION 
   To Quit"
CW 2450 FOR X=C1 TO 30:NEXT X:ROPT=PEEK(5
   3279):IF (ROPT=C3) OR (ROPT=C6) THEN G
   OSUB 1230:RETURN
SJ 2460 GOTO 2450
GH 2470 DIM A$(26),B$(128),BL$(40),CC$(14
   0),D$(2048),G$(616),GNAME$(16),MOV$(46
   ),P$(1456),PG$(616)
UX 2480 DIM PSGD$(131),PT$(1456),SR$(55),
   T$(183),Z$(26)
NS 2490 RESTORE 2990:READ C0,C1,C2,C3,C4,
   C5,C6,C7,C8,C9,C16,C26
YZ 2500 OLDRT=PEEK(106):NCH=OLDRT-C4:POKE
    106,OLDRT-C16:NCHBASE=256*NCH
UO 2510 GRAPHICS C8+C16:POKE 752,C1:POKE
   709,0:POKE 710,14
ST 2520 DLLO=PEEK(560):DLHI=PEEK(561):DLA
   DR=256*DLHI+DLLO
JH 2530 TOP8=256*PEEK(89)+PEEK(88):TOP0=T
   OP8+2280:X=PEEK(559)
QB 2540 POKE 559,C0:FOR I=62 TO 78:POKE D
   LADR+I,C2:NEXT I
ZO 2550 POKE DLADR+79,65:POKE DLADR+80,DL
   LO:POKE DLADR+81,DLHI:POKE 559,X
JR 2560 RESTORE 3000:FOR I=1684 TO 1713:R
   EAD X:POKE I,X:POKE I+40,X:NEXT I
SE 2570 POKE 1728,134:POKE 1730,142:POKE
   1741,148
UY 2580 POKE 512,148:POKE 513,C6:POKE DLA
   DR+62,130:POKE DLADR+63,130:I1=TOP0:I2
   =C0
PY 2590 GOSUB 1210:POSITION C8,C0:? "
   ":POSITION C8,C1:?
   " ":POSITION 31,C1:? " "
DV 2600 POSITION C8,C2:? "      PS LABEL M
   AKER    "
NR 2610 POSITION C8,C3:? " A Print Shop
   Utility "
KO 2620 POSITION C8,C4:? " ":POSITION 31,
   C4:? " ":POSITION C8,C5:? "
   "
AM 2630 POSITION 19,C8:? "by":POSITION 11
   ,11:? "Jim Pierson-Perry"
RQ 2640 GOSUB 1025:POSITION C2,14:? "Pres
   s any key to begin...":POKE 764,255
IP 2645 IF PEEK(764)=255 THEN 2645
NJ 2650 SR$(C1)="hh hh hh hh hh hh
   "
WF 2660 PSGD$(C1)="
   "
LB 2670 PSGD$(81)="
   "
EI 2680 CC$(C1)="
   "
XG 2690 CC$(81)="
   ":CC
   $(139)=CHR$(155):CC$(140)=" "
JT 2695 MOV$="hh h h h h h
   ":MOV=ADR(MOV$)
CZ 2700 P$(C1)=" ":P$(1456)=" ":P$(C2)=P$
   :B$(C1,128)=P$(C1,128):G$(C1,616)=P$(C
   1,616):PG$(C1,616)=P$(C1,616)
VZ 2710 PT$(C1,1456)=P$(C1,1456):T$(C1)="
   ":T$(182)=" ":T$(C2)=T$:BL$(C1,40)=T$
   (C1,40)
XC 2720 GNAME$(C1,C16)=T$(C1,C16)
SX 2730 SRADR=ADR(SR$):GADR=ADR(PSGD$):CA
   =ADR(CC$):BADR=ADR(B$):MOV=ADR(MOV$)
AU 2740 POKE 764,255:GNAME$(C1,C5)="BLANK
   ":CLEAR=40000
BF 2750 I2=USR(MOV,57344,NCHBASE,1024)
XN 2760 POSITION C0,C0:? " "
AY 2770 POSITION 12,C3:? " SELECT PRINTER
    ":POSITION 10,10:? "Prowriter =  STAR
   T "
OB 2780 POSITION 13,C8:? "Gemini =  SELEC
   T "
EM 2790 POSITION 14,C6:? "Epson =  OPTION
    ":POSITION C5,13:? "Press Button For
   Your Printer"
KB 2795 GOSUB 3300:P=C1
QA 2800 FOR I=C1 TO 10:NEXT I:X=PEEK(5327
   9):IF X=C6 THEN 2830
VP 2810 IF (X<>C5) AND (X<>C3) THEN 2800
QQ 2820 P=C0:PSGD$(40,40)=CHR$(128):PSGD$
   (46,46)=CHR$(74):IF X=C5 THEN P=-C1
VK 2830 POSITION C0,C0:? " ":POKE 82,C0:P
   OKE 54286,192
VG 2840 POSITION C1,C1:? "GRAPHIC=";GNAME
   $(C1,C16):POSITION C26,C1:? "FONT=INTE
   RNAL"
DB 2850 POSITION 0,2:? "     ":POSITION 13,
   C3:? " EDIT OPTIONS ":POKE 702,64
JZ 2860 INV=C0:FOR MOPT=C1 TO C5:GOSUB 12
   30+10*MOPT:NEXT MOPT
GA 2870 POSITION C5,12:? "Press  OPTION 
   To Pick Choice"
ML 2880 POSITION C7,13:? "Press  START  T
   o Continue"
CG 2890 INV=C1:MOPT=C1:GOSUB 1230+10*MOPT
UL 2900 FOR I=C1 TO 10:NEXT I:X=PEEK(5327
   9):IF X=C6 THEN 2940
JI 2910 IF X<>C3 THEN 2900
WB 2920 INV=C0:GOSUB 1230+10*MOPT:MOPT=MO
   PT+C1:IF MOPT>C5 THEN MOPT=C1
AH 2930 INV=C1:GOSUB 1230+10*MOPT:GOTO 29
   00
UP 2940 IF MOPT=C5 THEN 2970
OF 2950 ON MOPT GOSUB 1660,1490,2120,1300
   :GOSUB 1230:GOTO 2850
SO 2960 GOTO 2900
NG 2970 POKE 54286,64:POKE 106,OLDRT:GRAP
   HICS C0:POKE 752,C0:? " ":POKE 82,C2
GE 2980 END
IR 2990 DATA 0,1,2,3,4,5,6,7,8,9,16,26
HH 3000 DATA 72,138,72,162,138,169,142,14
   1,10,212,141,23,208,142,24,208,169,188
   ,141,0,2,169,6,141,1,2,104,170,104,64
EM 3010 GOSUB 1230:POSITION C8,C3:? " GRA
   PHICS DISK DIRECTORY ":POSITION C3,C6:
   ? "Please Wait - Reading Directory"
SL 3020 D$(C1)=" ":D$(2048)=" ":D$(C2)=D$
   :K=C0:L=C0:POKE 54286,64
PH 3030 FOR SECTR=362 TO 393:X=USR(SRADR,
   BADR,SECTR,C1,C3)
JS 3040 FOR X=C0 TO 96 STEP 32:IF B$(X+20
   ,X+20)<>"X" THEN 3060
YU 3050 D$(C16*K+C1,C16*K+C16)=B$(X+C1,X+
   C16):K=K+1
TR 3060 NEXT X:NEXT SECTR:GOSUB 1220:POSI
   TION C0,C6:? BL$(C1,39)
YP 3070 FOR I=C0 TO C7:POSITION C3,C5+I:?
    D$(C16*(L+I)+C1,C16*(L+I)+C16);"    ";D
   $(C16*(L+I+C8)+C1,C16*(L+I+C8)+C16)
FP 3080 NEXT I
SN 3090 POSITION C2,14:? "Press  OPTION 
   To Continue Directory":POSITION C8,15:
   ? "Press  START  To Return"
IJ 3100 FOR I=C0 TO 20:NEXT I:X=PEEK(5327
   9):IF X=C6 THEN RETURN
DB 3110 IF X<>C3 THEN 3100
RZ 3120 IF L+15>K THEN L=C0:GOTO 3070
UJ 3130 L=L+C16:GOTO 3070
PE 3140 GOSUB 1230:POSITION 10,C3:? " FON
   T DISK DIRECTORY ":POSITION C3,C6:? "P
   lease Wait - Reading The Directory"
SW 3150 D$(C1)=" ":D$(2048)=" ":D$(C2)=D$
   :K=C0:L=C0:POKE 54286,64
```

continued on next page

```
RB 3160 FOR SECTR=361 TO 368:X=USR(SRADR,
   BADR,SECTR,C1,C3)
LB 3170 FOR X=C0 TO 112 STEP C16:IF B$(X+
   14,X+C16)<>"FNT" THEN 3210
VE 3180 IF (B$(X+C1,X+C1)<>"B") AND (B$(X
   +C1,X+C1)<>"b") THEN 3210
HM 3190 IF ASC(B$(X+C2,X+C2))<>C9 THEN 32
   10
DV 3200 D$(C8*K+C1,C8*K+C8)=B$(X+C6,X+13)
   :K=K+C1
TG 3210 NEXT X:NEXT SECTR:GOSUB 1220:POSI
   TION C0,C6:? BL$(C1,39)
TD 3220 IF K=C0 THEN POSITION C0,C6:? "No
    Font Files On Disk":FOR X=C1 TO 100:N
   EXT X:RETURN
FT 3230 FOR I=C0 TO C7:POSITION C1,C5+I:?
    D$(C8*(L+I)+C1,C8*(L+I)+C8);"   ";D$(C
   8*(L+I+C8)+C1,C8*(L+I+C8)+C8);"   ";
ZG 3240 ? D$(C8*(L+I+C16)+C1,C8*(L+I+C16)
   +C8);"   ";D$(C8*(L+I+24)+C1,C8*(L+I+24
   )+C8):NEXT I
SF 3250 POSITION C2,14:? "Press  OPTION 
   To Continue Directory":POSITION C8,15:
   ? "Press  START  To Return"
JD 3260 FOR I=C0 TO 20:NEXT I:X=PEEK(5327
   9):IF X=C6 THEN RETURN
JS 3270 IF X<>C3 THEN 3260
ND 3280 IF L=32 THEN L=C0:GOTO 3230
RP 3290 L=L+32:GOTO 3230
EH 3300 I2=USR(MOV,57344,NCHBASE,1024):RE
   TURN
```

LISTING 2

```
ED 10 REM PSLABELS, LISTING 2
MZ 20 REM BY JAMES PIERSON-PERRY
FW 30 REM (c) 1985, ANTIC PUBLISHING
TR 35 REM (CREATES LINES 2650-2695 FOR PS
   LABELS.BAS)
CQ 40 REM (LINES 10-220 MAY BE USED WITH
   OTHER BASIC LOADERS IN THIS ISSUE.
IS 45 REM CHANGE LINE 70 AS NECESSARY.)
MG 50 DIM FN$(20),TEMP$(20),AR$(93)
HO 60 DPL=PEEK(10592):POKE 10592,255
WO 70 FN$="D:LINES.LST":REM THIS IS THE N
   AME OF THE DISK FILE TO BE CREATED
YS 80 GRAPHICS 0:? "     ANTIC'S GENERIC
   BASIC LOADER"
CD 90 ? ,"BY CHARLES JACKSON"
PW 100 POKE 10592,DPL:TRAP 170
PO 110 ? :? :? "Creating ";FN$:? "...plea
   se stand by."
LQ 120 RESTORE :READ LN:LM=LN:DIM A$(LN):
   C=1
BK 130 AR$="":READ AR$
XW 140 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
   2,255
DG 150 LM=LM-1:POSITION 10,10:? "(Countdo
   wn...T-";INT(LM/10);")     "
UY 160 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+
   1:NEXT X:GOTO 130
MZ 170 IF PEEK(195)=5 THEN ? :? :? "TOO
   MANY DATA LINES!":? "CANNOT CREATE FIL
   E!":END
CZ 180 IF C<LN+1 THEN ? :? "TOO FEW DATA
    LINES!":? "CANNOT CREATE FILE!":END
AL 200 OPEN #1,8,0,FN$
PP 210 POKE 766,1:? #1;A$;:POKE 766,0
AF 220 CLOSE #1:GRAPHICS 0:? " COMPLETED 
   "
HB 1000 DATA 513
UN 1010 DATA 050054053048032083082036040067049041061034104104141005003104141004
   003104141011003104141010003
ZV 1020 DATA 104104141001003104104170169082141002003032083228202173003003201001
   240004224000208241169000133
GP 1030 DATA 213173003003133212096034155050054054048032080083071068036040067049
   041061034104104133204104133
SN 1040 DATA 203104133206104133205104104133209141114006169000141145006169128162
   000157128006074232224008208
BU 1050 DATA 247169001162000157136006010232224008208247162000172145006169000145
   205133208133207164207177203
OJ 1060 DATA 061128006240013164208185136061721450341550500540550480320800830071
   068036040056049041061034006
FW 1070 DATA 024113205145205230208165207024101209133207165208201008208219238145
   006232224008208200165203024
SM 1080 DATA 105001133203144002230204169002061440062051440062081770960341550500
   540560480320670670360400 67
YP 1090 DATA 049041061034216104104133208104133207104133206141133006104133205141
   132006104141128006104104104
RN 1100 DATA 141129006141130006169000141131006172131006177207201032176005024105
   064016007201096176003056233
MX 1110 DATA 032133203169000133204133209062030382040062030382040062030382041650
   34155050054057048032067067
WW 1120 DATA 036040056049041061034204024109128006133204164209177203172131006145
   205230209165209201008240014
PG 1130 DATA 165205024109129006133205144229230206208225238131006206130006240013
   173132006133205173133006133
UC 1140 DATA 206024144034058067067036040049051057041061067072082036040049053053
   041058067067036040049052048
VI 1150 DATA 041061034096034155050054057053032077079086036061034104104133241104
   133240104133213104133212104
GZ 1160 DATA 133239104133238160000177240145212230212208002230213230240208002230
   241198238208234198239016230
CC 1170 DATA 096034058077079086061065068082040077079086036041155
```

lesson 13: color commands

NEW OWNERS COLUMN

Article on page 23

LISTING 1

Don't type the TYPO II Codes!

```
NR 10 REM THE NEW OWNER'S COLUMN
PQ 20 REM BY DAVID PLOTKIN
QC 25 REM (c)1987, ANTIC PUBLISHING
PF 30 GRAPHICS 7+16:REM 4 COLORS, 160x92
TF 40 C=2:REM COLOR INDEX
CY 50 SETCOLOR 0,5,4:SETCOLOR 1,5,8:SETCO
   LOR 2,5,12:REM SET THE COLORS
RW 60 FOR LP=20 TO 30:REM DRAW LANDSCAPE
QW 70 COLOR C:C=C+1:IF C=4 THEN C=1
KQ 80 PLOT 0,LP:DRAWTO 159,LP
OS 90 NEXT LP
PZ 100 FOR LP=31 TO 50 STEP 2
OC 110 COLOR C:C=C+1:IF C=4 THEN C=1
RL 120 PLOT 0,LP:DRAWTO 159,LP:PLOT 0,LP+
   1:DRAWTO 159,LP+1
OX 130 NEXT LP
VB 140 FOR LP=51 TO 72 STEP 3
OK 150 COLOR C:C=C+1:IF C=4 THEN C=1
JM 160 PLOT 0,LP:DRAWTO 159,LP:PLOT 0,LP+
   1:DRAWTO 159,LP+1:PLOT 0,LP+2:DRAWTO 1
   59,LP+2
XH 180 NEXT LP:COLOR C
```

```
OC 190 FOR LP=75 TO 79
XJ 200 PLOT 0,LP:DRAWTO 159,LP
OU 210 NEXT LP
PK 220 COLOR 0:PLOT 79,20:C=2
NF 230 FOR LP=1 TO 10
QO 240 NDX1=79-LP:NDX2=79+LP:NDY1=20+LP-1
       :NDY2=20+LP
OL 250 COLOR C:C=C+1:IF C=4 THEN C=1
YG 260 PLOT NDX1,NDY1:DRAWTO NDX1,NDY2:DR
       AWTO NDX2,NDY2:DRAWTO NDX2,NDY1
PG 270 NEXT LP
PU 280 FOR LP=11 TO 32 STEP 2
QY 290 NDX1=79-LP:NDX2=79+LP:NDY1=20+LP-1
       :NDY2=20+LP
OC 300 COLOR C:C=C+1:IF C=4 THEN C=1
XX 310 PLOT NDX1,NDY1:DRAWTO NDX1,NDY2:DR
       AWTO NDX2,NDY2:DRAWTO NDX2,NDY1
IN 320 PLOT NDX1-1,NDY1+1:DRAWTO NDX1-1,N
       DY2+1:DRAWTO NDX2+1,NDY2+1:DRAWTO NDX2
       +1,NDY1+1
OZ 330 NEXT LP
YF 340 FOR LP=33 TO 58 STEP 3
NM 350 NDX1=79-LP:NDX2=79+LP:NDY1=20+LP-1
       :NDY2=20+LP+1
OO 360 COLOR C:C=C+1:IF C=4 THEN C=1
YJ 370 PLOT NDX1,NDY1:DRAWTO NDX1,NDY2:DR
       AWTO NDX2,NDY2:DRAWTO NDX2,NDY1
IZ 380 PLOT NDX1-1,NDY1+1:DRAWTO NDX1-1,N
       DY2+1:DRAWTO NDX2+1,NDY2+1:DRAWTO NDX2
       +1,NDY1+1
YL 390 PLOT NDX1-2,NDY1+2:DRAWTO NDX1-2,N
       DY2+2:DRAWTO NDX2+2,NDY2+2:DRAWTO NDX2
       +2,NDY1+2
OU 400 NEXT LP
NT 500 FOR LP=1 TO 20
AP 510 X=RND(0)*159:Y=RND(0)*18
BZ 520 COLOR RND(0)*3+1
TC 530 PLOT X,Y
PD 540 NEXT LP
JC 600 REM THE ROTATION ROUTINE
GD 610 LUM1=4:LUM2=8:LUM3=12:HOLD=0:WAIT=
       20
HS 620 SETCOLOR 0,5,LUM1:SETCOLOR 1,5,LUM
       2:SETCOLOR 2,5,LUM3
HZ 630 HOLD=LUM3:LUM3=LUM2:LUM2=LUM1:LUM1
       =HOLD
YZ 640 FOR LP=1 TO WAIT:NEXT LP
KS 650 WAIT=WAIT-(STICK(0)=14 AND WAIT>1)
       +(STICK(0)=13 AND WAIT<40)
OR 660 GOTO 620
```

ST RESOURCE

PATHWAYS UNCOVERED

Article on page 56

LISTING 1

```
/*
 *   Charlie's Line Limiter  Utility
 *   File: ALIMIT.C
 *   version 122586
 *   (c) 1986 Antic Publishing
 *   Written by Patrick Bass
 *
 *---- Alcyon Include File -----------------*/

#include        "osbind.h"

#define    TRUE             (1)
#define    FALSE            (0)
#define    CANCEL           (0)
#define    NO               (2)
#define    ERROR            (-1)
#define    LESS             1
#define    MORE             2
#define    SELECT           3
#define    begin            {
#define    end              }
#define    wend             }
#define    repeat           }
#define    next             }
#define    endif            }
#define    not              !
#define    equals           ==
#define    does_not_equal   !=
#define    then
#define    AND              &&
#define    OR               ||
#define    ANDed_with       &
#define    ORed_with        |
#define    DELAY            for( delay=0; delay<32767; delay++ );
#define    ESC              27
#define    ESCAPE           27
```

continued on next page

```
#define    SPACE          32
#define    WHITE          0
#define    BLACK          1
#define    RS232          1
#define    CONSOL         2
#define    LOAD           1
#define    SAVE           2
#define    STX            2
#define    ETX            3
#define    CR             13
#define    LF             10
#define    ATARIEOL       155
#define    YES            1
#define    NO             2

/*---------------- Alcyon Declarations/Equates --------*/
int  contrl[ 12 ],
     intin[ 256 ],  ptsin[ 256 ],
     intout[ 256 ], ptsout[ 256 ],
     workin[]={ 1,1,1,1,1,1,1,1,1,1,2 }, workout[ 57 ],
     i, j, k, l, character, type, convertable,
     resolution, inchar, lenlo, lenhi, mx, my, color,
     delay, drive, dum, lo_word, hi_word,
     gem_handle, file_handle, read_handle,
     for_reading, action_desired, file_index,
     bytes_to_read, button, pressed, finished,
     new_palette[ 16 ], org_palette[ 16 ],
     linelength;

char text_buffer[ 100000 ],
     temp_buffer[ 100000 ],
     path[ 50 ],
     filename[ 50 ],
     workname[ 50 ];

long        max_len=100000, write_handle, write_bytes, bytes_read;

/*---------------------------------------------------------------------------*/
main()
begin
     initialize();

     do begin

          chop_dem_lines();

     repeat while( not finished );

     terminate();
end

/*--------------------------------*/
initialize()
begin
     appl_init();
     gem_handle=graf_handle( &i, &i, &i, &i );
     v_opnvwk( workin, &gem_handle, workout );

     form_alert( 1,
          "[0][|Charlies' Line Limiter| Utility V.122586|][Perform]" ),
     finished=FALSE;
     for_reading=0;
end

/*------------------------*/
chop_dem_lines()
begin
     get_line_length();
     read_the_file();
     limit_the_lines();
     write_the_file();
```

```
     button=form_alert( 2,
             "[0][|Want to limit another file?|][Yes|No]");
     if( button equals NO )then finished=TRUE;
end

/*---------------------------*/
get_line_length()
begin
     char temp[ 50 ], fstring[ 50 ];
     int  x1;


     linelength=40;
     button=FALSE;

     while( button does_not_equal SELECT )begin

          fstring[ 0 ]=0;
          strcat( fstring, "[0][|Desired Line Length: " );
          long2ascii( (long)linelength, temp );
          strcat( fstring, temp );
          strcat( fstring, "  |][<|>|Select]" );
          fstring[ strlen( fstring )+1 ]=0;
          button=form_alert( 3, fstring );

          if( button equals LESS )then linelength--;
          if( button equals MORE )then linelength++;

          if( linelength<1 )then linelength=1;
     wend
end

/*-----------------------------*/
limit_the_lines()
begin
     long      i, j, linecount, linemax;
     int       character, advancing;


     linecount=0;

     for( i=0, j=0; i<( bytes_read+1 ); i++, j++ )begin

          temp_buffer[ j ]=text_buffer[ i ];

          if( text_buffer[ i ] equals CR
          AND text_buffer[ i+1 ] equals LF )then begin
               linecount=0;
          endif

          linecount++;
          if( linecount > linelength )then begin

               for( ;text_buffer[ i ]>SPACE; )begin
                    temp_buffer[ ++j ]=text_buffer[ ++i ];
               next
               temp_buffer[ j++ ]=CR;
               temp_buffer[ j ]=LF;
               linecount=0;
          endif
     next

     bytes_read=( j );
end


/*-----------------------------*/
read_the_file()
begin
     file_handle=ERROR;
```

continued on next page

```
        drive=Dgetdrv();
        path[ 0 ]=( drive+'A' );
        path[ 1 ]=':';
        Dgetpath( &path[ 2 ], 0 );
        strcat( path, "\\*.*" );
        filename[ 0 ]=0;

        fsel_input( path, filename, &button );
        if( button does_not_equal CANCEL )then begin
             strcopy( path, workname );
             truncate( workname );
             strcat( workname, filename );

             v_hide_c( gem_handle );
             file_handle=Fopen( workname, for_reading );
             if( file_handle > ERROR )then begin
                  bytes_read=(long)Fread(file_handle,max_len,text_buffer);
             endif
             Fclose( file_handle );
             v_show_c( gem_handle );
             if( bytes_read equals max_len )then begin
                  form_alert( 1, "[0][|Warning! Buffer Overflow.|][Exit]" );
             endif
        endif
end

/*-----------------------------------*/
write_the_file()
begin
        v_show_c( gem_handle );

        drive=Dgetdrv();
        path[ 0 ]=( drive+'A' );
        path[ 1 ]=':';
        Dgetpath( &path[ 2 ], 0 );
        strcat( path, "\\*.*" );
        filename[ 0 ]=0;

        fsel_input( path, filename, &button );
        strcopy( path, workname );
        truncate( workname );
        strcat( workname, filename );

        v_hide_c( gem_handle );
        file_handle=Fcreate( workname, 0 );
        if( file_handle > ERROR )then begin

             Fwrite( file_handle, bytes_read, temp_buffer );
        endif
        Fclose( file_handle );
        v_show_c( gem_handle );
end

/*------------------------------------------*/
strcopy( from, to )
char *from, *to;
begin
        while ( *to++ = *from++ );
end

/*------------------------------------------*/
strcat(to, from)
char *to,*from;
begin
        while ( *to) ++to;
        while ( *to++ = *from++ );
end
/*------------------------------------------*/
truncate( string )
```

```
char *string;
begin
      int x;

      for( x=strlen( string ); x>=0; --x )begin
            if( string[ x ] equals 92) break;
      end
      string[ x+1 ]=0;
end

/*-------------------------------------------*/
strlen( string )
char *string;
begin
      int  x;

      for( x=0; *string++; ++x );
      return x;
end

/*--------------------------------*/
long2ascii( value, astring )
long value;
char *astring;
begin
      long divisor;
      char *bstring, digit;

      bstring=astring;

      for( divisor=1000000L; divisor>0; ++bstring, divisor/=10L )begin
            digit=( value/divisor );
            value=( value-( digit*divisor ));
            *bstring=( digit+'0' );
      next
end

/*--------------------------------*/
terminate()
begin
      v_clsvwk( gem_handle );
      appl_exit();
end
```

ST NEW PRODUCTS
continued from page 70

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Turn your ST into a terminal for databases, sending and receiving telexes and electronic mail and computer-to-computer communication. **Fastcom** lets you communicate with such ASCII/text systems as Easylink, MCI Mail and bulletin boards, and includes a full implementation of VT100/VT52. Files and software can be transferred between computers—and so can binary files. The GEM implementation includes pull-down menus, scroll boxes, foreground/multiple screen operation and multitasking.

$69. Atari Corp., 1196 Borregas Avenue, P.O. Box 3427, Sunnyvale, CA 94088-3427. (408) 745-2000. PRESS.
CIRCLE **288** ON READER SERVICE CARD

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Organize your ST desktop with label-indexed daily memos, an address/phone book, a special alarm system, flexible date and interval calculator, and a calendar with a range of 200 years. **Inagem Agenda+** has them all, along with a unique phone entry display that allows zooming in for more detailed information.

$49.95. Inagem Technologies Inc., 6117 Gerard Morisset, Montreal, Quebec H1M 3J8; Canada. (514) 256-9942. PRESS
CIRCLE **289** ON READER SERVICE CARD

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Because the **Micro-Time ST** is an internal clock/calendar, it frees the cartridge port for other uses. Battery-backed and able to keep the time and date for 90 days when the system is off, the hard disk-compatible Micro-Time ST uses the ST's built-in clock chip, and its nickel-cadmium batteries recharge while you're using the system. Installation is quick and solderless, and the clock works with or without CONTROL.ACC.

$49.95. Micro-Time Electronics, P.O. Box 125, Merlin, OR 97532. (503) 476-9509. PRESS
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- Atariwriter Plus 39
- Learning Phone 19
- Proofreader 14
- Silent Butler 19

ACCESS
- Leaderboard 26
- Tournament Disk 15

ACCOLADE
- Hardball 20
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- Music Studio 23
- Mindshadow 17
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- Printshop Companion 26
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- Mind Pursuit 20
- Alternate Reality 26
- Crosscheck 20
- Never Ending Story 20

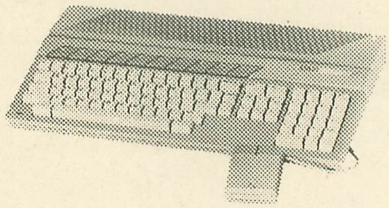
ELECTRONIC ARTS
- Racing Destruction Set 11
- Super Boulder Dash 11
- Chessmaster 2000 28
- Touchdown Football 28

MICROPROSE
- Conflict in Vietnam 26
- Silent Service 23
- F-15 Strike Eagle 23
- Kennedy Approach 23

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- Action 49
- Action Tool Kit 19
- Basic XL 38
- Basic XL Tool Kit 19
- DOS XL 19
- Basic XE 49
- Mac 65 49
- Mac 65 Tool Kit 19

SYNAPSE
- Syn-File 33
- Syn-Calc 33
- Syn-Trend 28

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- Supra 300 ST 59
- Supra 1200 ST 149
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- P:R: Connection 59
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- US Doubler without Sparta DOS 29
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- Leaderboard 26
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- Hacker 29
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- Bridge 4.0 19
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- Peggammon 13
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- Disk Doctor 23
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- Meta Pascal 75
- Lattice C 114
- A-Calc 45
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- A-Ram 15
- Expert Opinion 75
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- Printmaster 26
- Art Gallery I 19
- Art Gallery II 19

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- Computer Almanac 23
- Joke & Quotes 23
- Disk Utilities 33
- Ramdisk 23
- Hippospell 27
- Backgammon 27
- Hippoword 59
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- Hippopixel 27
- Hippovision B & W 109

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- Utilities 39
- M-Disk 26
- Mudpies 26
- Soft Spool 26
- Animator 26
- Calendar 19
- Mi-Term 33
- Cornerman 33
- Time Bandit 26
- Major Motion 26
- Cards 26
- Business Tools 33
- Pers. Money Mgr. 33
- BBS 2.0 54

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- Music Box 32
- Megafont 25

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- LCM-2000 Clock 33
- Macro-Manager 49
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- Copy II 27
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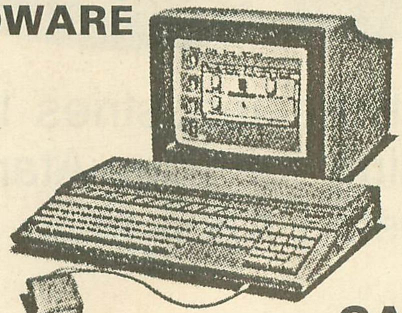
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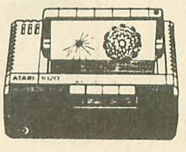
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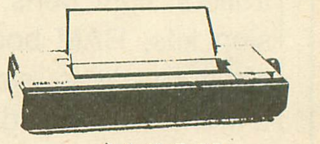
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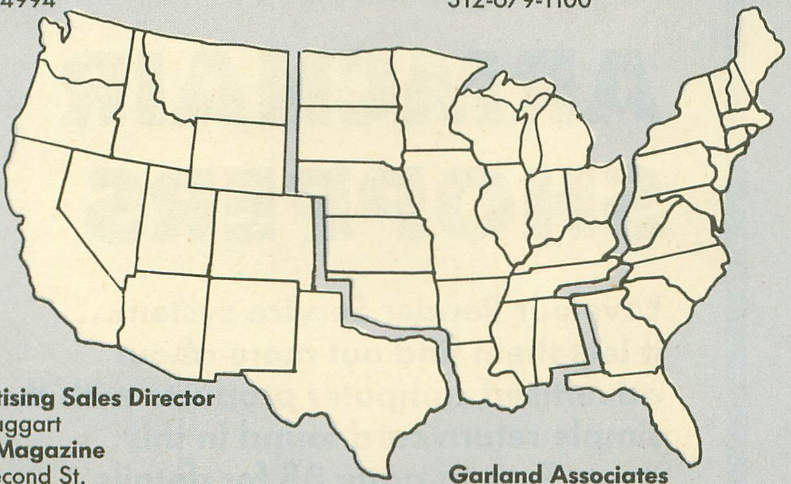
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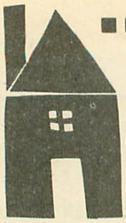
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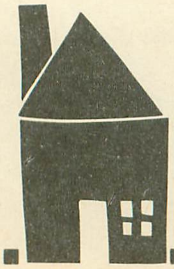
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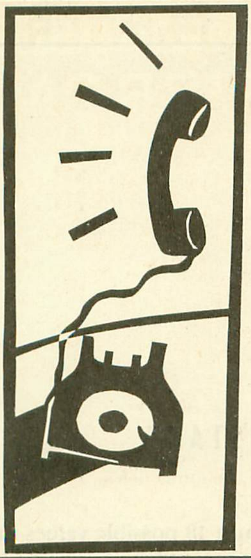
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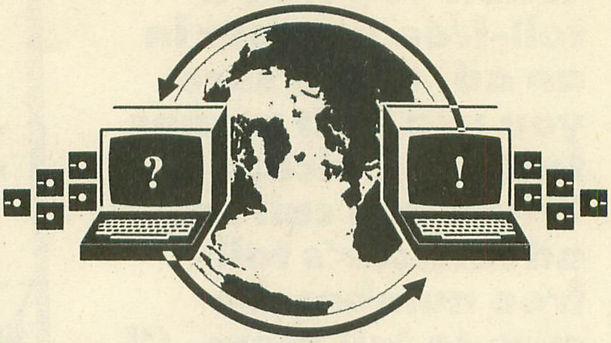
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BY BILL MARQUARDT, ANTIC TECHNICAL ASSISTANT

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One of the great things about public domain software is the way that good programs spread like wildfire—especially good *short* programs such as we now reprint in Tech Tips each month. Antic credits the source where we find each Tech Tip printed here. If we see the same tip in multiple sources, such as several users group newsletters, we credit the source with the earliest publication date we know of.

However, by the very nature of public domain software, it can be difficult for Antic to figure out who is the true author of a routine.

In the January Tech Tips column we published a RAMdisk routine credited to Larry Nocella of the New South Wales (Australia) Atari Computer Enthusiasts. As it turns out, Nocella hails from Woodbury Heights, New Jersey and is an active member of JACS, the Jersey Atari Computer Society—which originally published his program in Oct. 1985, 13 months before we started running Tech Tips as a regular full-page feature in the November 1986 issue. However, Larry kindly sent along three more of his fine routines from Between Bytes, the JACS newsletter.

MARCH '87 DISK

The March 1987 Antic Disk had an error on the label. The disk should have been labelled Volume 5, Number 11.

LARRY'S LISTINGS

Nocella's Listing 1 is called Joystick Reader. It can return 18 possible values instead of the usual nine. This machine language routine would most likely be used for games. It uses the format X=USR(ADDR,STKNUM). ADDR is the address of the routine and STKNUM is the joystick port to be read. Variable X returns the normal joystick directional value that you would expect when the joystick button is not pressed, but it adds 128 to the value if the button is pressed.

```
10 DIM A$(32):STICKNUM=0
20 FOR I=1 TO 32:READ X:A$(I)=CHR$(X):NEXT I
30 X=USR(ADR(A$),STKNUM):? X:GOTO 30
50 DATA 104,104,104,170,189,120,2,188,132,2,208,5,160,
128,184,80,2,160,0,132,203,24,216,101,203,160,0,132
60 DATA 213,133,212,96
```

Listing 2 is a quick and easy way to generate the famous Atari Rainbow effect. RUN the progam and the rainbow starts. Exit by pressing the [START] key. Call this routine with Z=USR(ADDR,X). ADDR is the address again, and x is the number of the color register affected. Subtract 704 from the color register location to find the value of X. This will work for Player/Missile graphics as well!

```
10 CT=0:X=8:REM BACKGROUND
20 CT=CT+1:READ Q:IF Q=-1 THEN 40
30 POKE 1663+CT,Q:GOTO 20
40 Z=USR(1664,X)
50 END
60 DATA 104,104,104,168,232,142,10,212,138,153,18,208,
169,6,205,31,208,208,241,96,-1
```

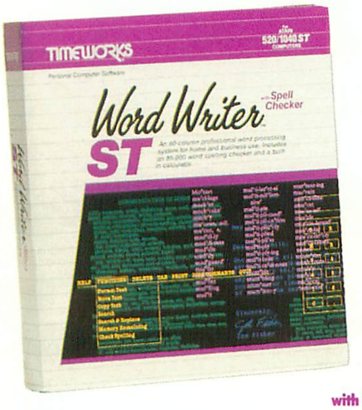
Listing 3 is a software driver for the Hardware Key project which appeared in the August 1986 Tech Tip on page 102. (Antic used to publish Tech Tips as occasional fillers prior to November 1986, when they became a monthly page.) Call the routine with X=USR(ADDR), where ADDR is the address of the routine. The routine will loop until the correct hardware key is inserted. Because of the differences between keys, change the DATA statement in line 40 to your correct PADDLE 2 and PADDLE 3 values shown by PEEK(626) and PEEK(627). Consider this routine a starting point because many improvements come to mind, such as disabling the [RESET] key.

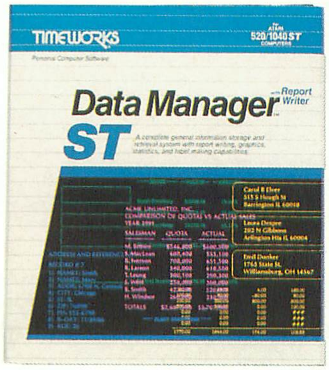
```
10 GRAPHICS 0:POKE 752,1:POKE 710,144:POKE 712,148:POKE 709,12
20 DIM H$(18):FOR I=1 TO 18:READ X:H$(I)=CHR$(X):NEXT I
30 DATA 104,24,216,173,114,2,201,0,208,249,173,115,2,201,0,208,242,96
40 READ PDL2,PDL3:H$(8)=CHR$(PDL2):H$(15)=CHR$(PDL3):DATA 3,5
50 POSITION 6,3:? "PUT HARDWARE KEY IN PORT 2!"
60 DUMMY=USR(ADR(H$))
70 POSITION 15,5:? "THANK YOU!":POKE 752,0:END
```

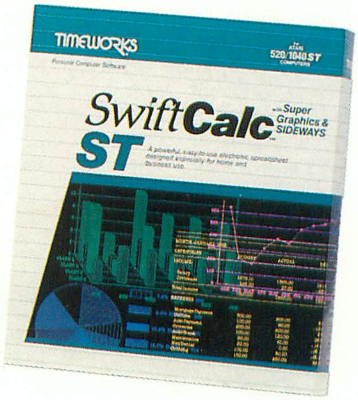
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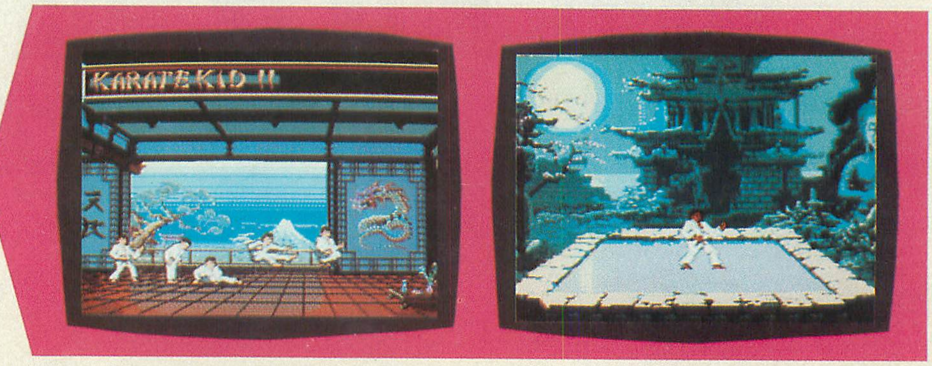
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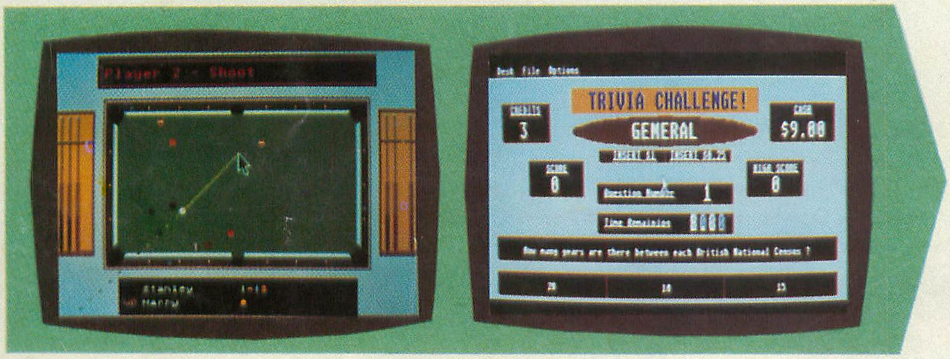
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